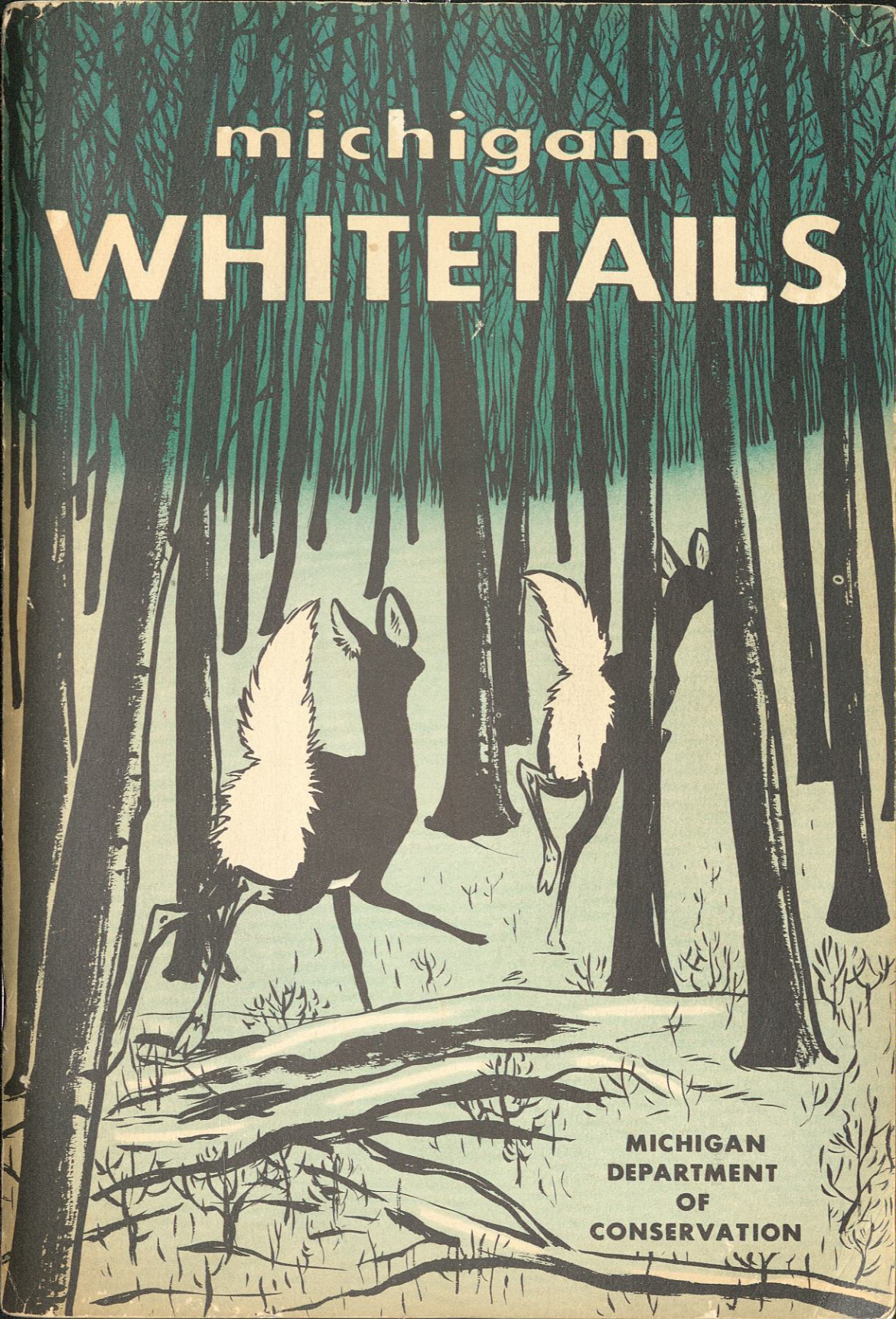
michigan
WHITETAILS



MICHIGAN
DEPARTMENT
OF
CONSERVATION

MICHIGAN WHITETAILS

David H. Jenkins and Ilo H. Bartlett

Illustrated by

Oscar Warbach

1959

Game Division

MICHIGAN DEPARTMENT OF CONSERVATION

Lansing

A contribution of Federal Aid in Wildlife Restoration Projects
6-R, 63-R, 70-R, 89-R, 95-R, and 96-R.

For free distribution only

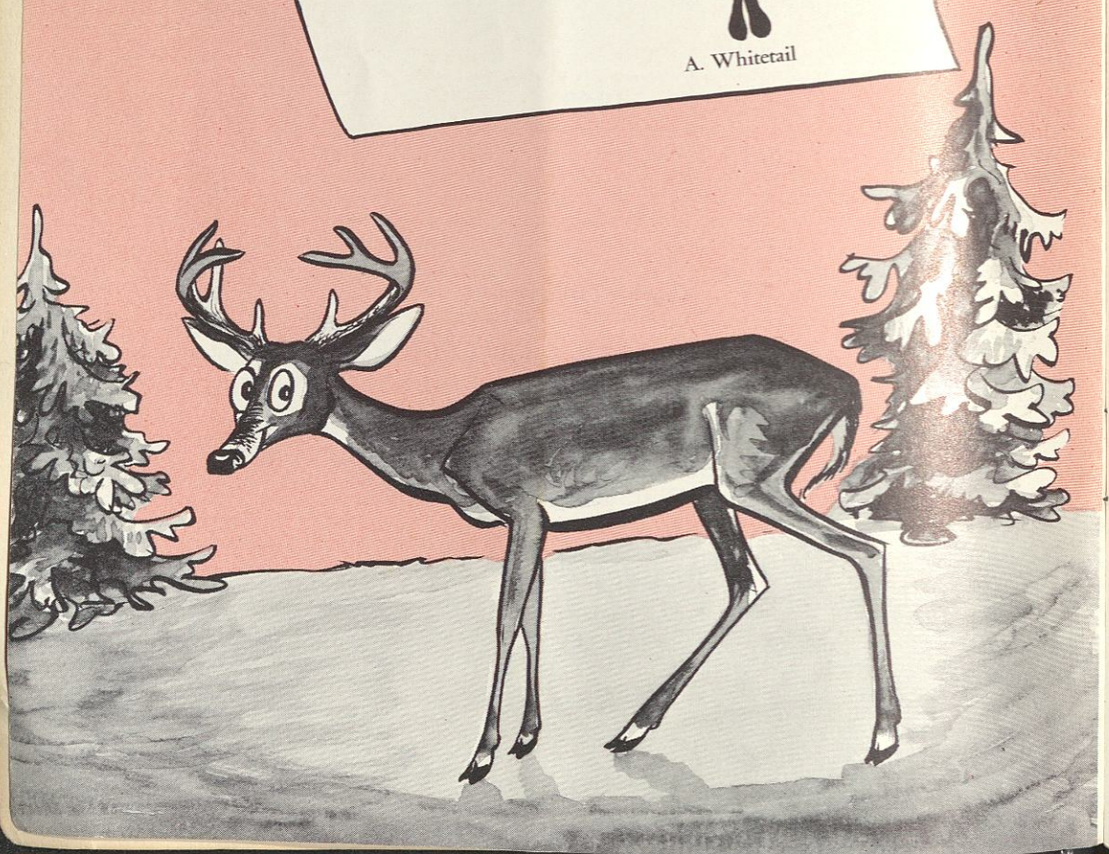
ACKNOWLEDGMENT

To all you sportsmen whose dollars and support made this booklet possible, our sincerest 12-point thanks. Two hundred pounds of gratitude to the Pittman-Robertson program that published it and financed much of the research behind it.

Antlers up! to all you men and women, in the Conservation Department and out, who have worked to learn the facts about deer—my people—and to acquaint your people with our problem. Our deepest appreciation to all—whether you worked on snowshoes or with slide rules, on the floor of the Legislature or at sportsmen's meetings, at the experiment stations or in the swamps, with calipers or typewriters or rifles or scalpels. We are most grateful to you all for this our story.

Faithfully yours,

A. Whitetail



CONTENTS

STRAIGHT FROM THE SHOULDER 5
Misconceptions make the white-tailed deer Michigan's most controversial game animal.

DEER PROBLEM — WHAT'S THAT? 8
Spotlighting the problem helps show the way to a solution.

THE UP AND DOWN OF MICHIGAN DEER 10
A look at the past explains the present.

THE DOWN AND UP OF MICHIGAN DEER 13
As deer food goes, so go the deer.

SWALLOWING THE FIRST PILL 17
Unselling an idea is often harder than selling it in the first place.

INCREASING THE DOSE 19
Controlled hunting for bucks, does, and fawns in the fruit country set the pattern for progress.

1952 — THE ADULT DOSE 21
Michigan's introduction to large-scale antlerless deer shooting.

WHERE TO NOW? 25
There's a mountain of information to help chart the course for the future.

THE LEADING CHARACTER 29
Assorted facts about the most adaptable big game animal in North America.

HOW OLD IS MY DEER? 31
You can't tell the age of either a deer or a "Diana" by asking or glancing.

BUTTONS, SPIKES, AND ROCKING CHAIRS 33
Antlers are used for fighting, making gun racks, and telling the physical condition of the deer.

WEIGHTY FACTS 36
There are mighty few over-weight deer in Michigan today.

THE CRAZY MOON 38
The rutting season and matters relating thereto.

FAWN PRODUCTION — THE KEY 40
A big crop of fawns every spring from a not-too-big, but well fed, breeding herd — that's the idea.

A FAIR BILL OF FARE 43
Unless we look at the forest through the deer's eyes we'll get a wrong impression of the deer food situation.

HOW MANY DEER IN MICHIGAN? 46
The hunter counts deer from his favorite runway but it takes thousands of man-hours of work, around the calendar, to get an accurate picture of the whole herd.

THE TAKE-HOME PAY 50
More venison is going into the stew but deer hunting has not gone to pot.

DEER DISEASES AND PARASITES 53
Given enough to eat, most deer are at least as healthy as most deer hunters.

STARVATION 55
The easy way out — let Nature take care of the surplus deer.

DEER RANGE 57
Most of northern Michigan's winter deer range is saturated with deer. Winter food sets the level — high in some places, low in others.

THE PROBLEM OF CHANGE 60
Time works against deer. Young forests produce the most deer food but forests don't stay young.

THE AXE AND SAW 62
What the deer herd needs is a modern Paul Bunyan and a market for his products.

FIRE AND CHEMICALS 65
Controlled fires and brush killers can increase deer food in some places, some of the time, but not in all places all the time.

PLANTATIONS AND FOOD PATCHES 66
Deer eat everything from corn to Christmas trees. That would seem to solve the food problem. But . . .

EASY SOLUTIONS THAT DON'T WORK 67
The solution to the deer problem is easy — as long as some of the basic rules of Nature and economics are ignored.

BUCKS, BULLETS, AND BONEHEADS 70
Hunting accidents are needless blots on the record book.

THE STRING AND STICK FRATERNITY 72
Archery — handicap hunting that emphasizes sport more than meat.

THE MISSOURI ATTITUDE 74
If seeing is believing, let's look at some examples of deer management at work.

UTOPIA AND HOW TO GET THERE 77
We are just beginning to really cash in on the ability of the deer herd to provide us with recreation.

STRAIGHT FROM THE SHOULDER

MICHIGAN WHITETAILS is a straightforward, cards-on-the-table account of what is known about Michigan deer—where they live and how they keep ahead of that odd mixture of optimism, enthusiasm, and "Dan'l Booneism," the Michigan deer hunter.

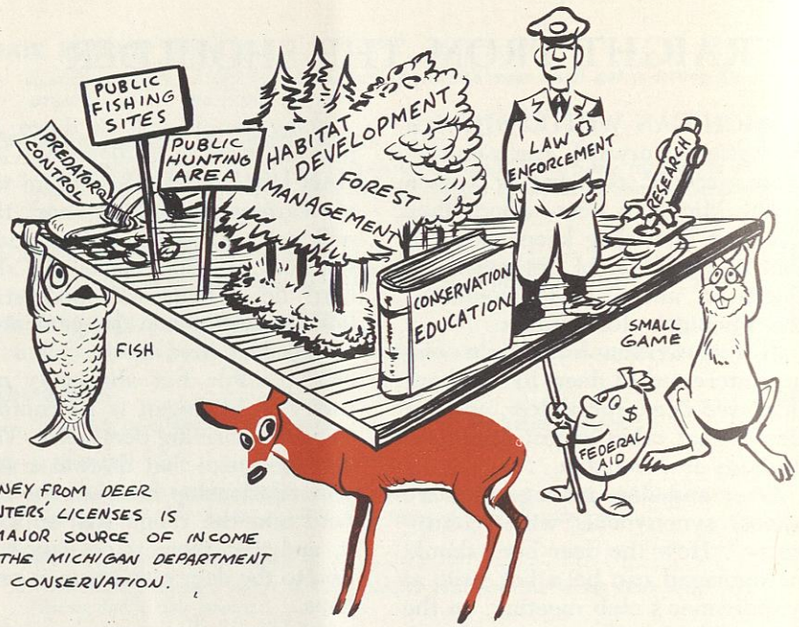
It was written for people who are interested in deer, like to hunt deer, see deer, study deer, and eat deer. That takes in just about everybody in Michigan.

Deer and deer management are almost synonymous with "controversy." How the deer herd should be managed can be a hot issue at a sportsmen's club meeting, on the floor of the Legislature, at a church men's club supper, or at a family reunion. The barber shop is, of course, a famous source of facts and fancies concerning deer management.

Many people will sit down and take the trouble to digest MICHIGAN WHITETAILS with an idea of learning something, and they will get up with a better understanding of what makes the deer herd tick. They will understand how harvesting a larger percentage of the deer herd in the fall is not only possible but absolutely necessary if Michigan is to continue to have a thriving deer herd. They will recognize that there is a complex relationship between the deer herd and the range that supports it, and that there is no easy solution to the deer management problems.

Of course there are some others who will not take the trouble to read anything written by the Department of Conservation about deer—not with the idea of learning from it, at any rate. They believe that they already know a simple solution to "the deer problem," and are convinced that the Department's deer managers are stupid (or worse) in their reluctance to adopt it. "Why can't the Department see what's obvious?" they ask. The trouble is, things are not always what they seem to be and the easy solution doesn't always work.

The deer manager **must** deal in facts based on sound biological principles that have been squeezed and boiled out of the mountain of information built by years of research and study in Michigan and throughout the deer range of North America and Europe.



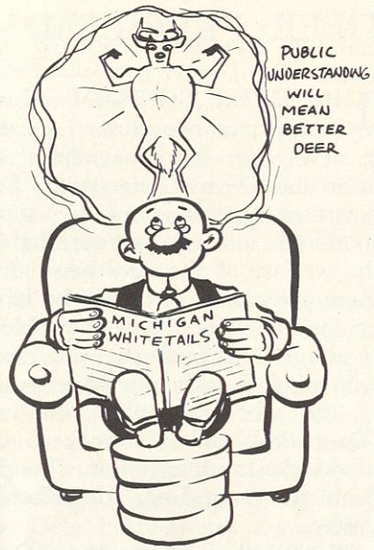
MONEY FROM DEER HUNTERS' LICENSES IS A MAJOR SOURCE OF INCOME TO THE MICHIGAN DEPARTMENT OF CONSERVATION.

Some extremists have gone so far as to assert that the Conservation Department is trying to "exterminate" the deer herd. They forget one pretty obvious fact that Department men don't forget: in Michigan, money from deer hunters' licenses is a major source of income to the Department. Without that money, the conservation program as we know it today—large areas of public hunting grounds, improvement of food and cover for wildlife, research, law enforcement, conservation work in schools, forest fire protection and forest management for game—would not exist. The Department does not want deer numbers to be any lower than absolutely necessary for the welfare of the deer themselves. The Department has no wish to put itself out of business.

Michigan has had deer management, but with a couple of exceptions it has necessarily fallen short of the complete program that the biological facts call for. If the Conservation Department authorized deer hunting seasons that would take adequate numbers of deer from all over the north country before such a program had widespread public support, what would be accomplished? There would be public-demanded legislation to repeal all seasons on antlerless deer and we'd be right back to Model T deer management. So we proceed cautiously—knowing what should be done, but tempering it down to what the sportsmen and public will accept—a compromise. But in this business a compromise is progress and there **has** been a lot of progress since deer took over the north country.

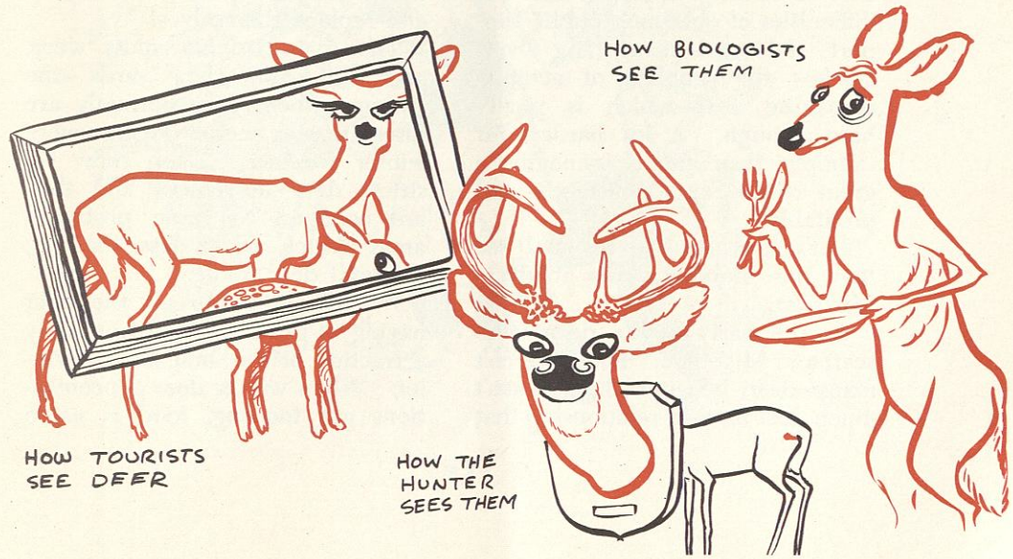
When the public is ready to accept a realistic deer management program in Michigan, there will be a lot more venison brought home by a higher percentage of successful deer hunters. Deer will be better physical specimens. Their antlers will look better in the den, and there will be more steaks per deer. You will be able to find at least a little browse left for deer in the swamps come April. This means fewer piles of skin and bones on the spring snows. Starved deer feed the scavenging coyotes, bobcats, and foxes but they don't help fill your freezer. The hunter's quick bullet can take the place of Nature's cruel method of starving the herd down to fit the range.

There will be less damage to crops and orchards by hungry deer and a lot less of the sportsman's license money will have to be spent in trying to prevent him from unnecessarily hamstringing his own sport to the detriment of the deer herd. The way it is now a lot of the Department's time and effort has to be used in telling the public this vital story of why it's necessary to take more deer in order to keep the deer herd healthy.



Michigan will have better deer herd management only when enough of us understand more about the whitetail and his ways.

That is why we wrote this book.



DEER PROBLEM? — WHAT'S THAT?

THE DEER PROBLEM – these words have been tossed around in newspapers and magazines, on radio and TV, by Conservation Department people, and by some sportsmen and others interested in the welfare of the deer herd. But there are plenty of folks who have no idea of what the deer problem is about, and perhaps even more who don't have a complete grasp of the whole complex situation. "Deer Problem" is a poor choice of words to describe it. "People Problem About Deer" describes it better.

The People Problem About Deer is not the sole property of the State of Michigan. It is found in almost every other state, and with a few minor variations it is the same throughout the length and breadth of the land. Deer managers and other Conservation administrators often go so far as to say that there is no real deer problem; it is all a problem of people. This isn't really true of course. It is just that the difficulties of obtaining public support and understanding overshadow the problem of actually managing deer—which is plenty hard enough. A lot harder, for example, than merely managing a great cattle ranch efficiently and profitably.

Let's look back a bit and see how this problem came about in Michigan.

In the early 1900's deer were scarce in Michigan. There weren't many deer because there wasn't much deer food—a relationship that was not apparent to most people, including the ancestral organization of the Conservation Department. In 1921 the one-buck-per-hunter-per-year law was crammed down the throat of the Michigan deer hunter. "Crammed" is the proper word because it was just as hard a fight to get him to swallow this pill then as it has been to get him to change his brand of deer management medicine in the 1940's and '50's.

The deer herd increased beyond even the wildest expectations. "Go to northern Michigan if you want to see deer." "A deer behind every bush." "I saw 50 deer the first day of the season." "A million deer in Michigan" (and this was probably a conservative estimate).

It's enough to say here that in 1930 the bucket was full and deer were spilling over the top. They were beginning literally to eat themselves out of house and home. They were consuming vegetation faster than the plants could grow and replace themselves.

The main trouble spots were, and still are, the "yards"—the swamps where deer normally are forced to seek shelter during severe winter weather. Deep snow restricts deer movement and they are confined to these protected areas which cover less than ⅓ the total deer range.

It boils down to all the deer having to get their food from only a fraction of the land during winter. When winter deer concentrations get too big, food is eaten faster than it can grow. Winter food, then, is the bottle-neck—the weak link. The amount of winter food determines how many deer can be carried through the winter.

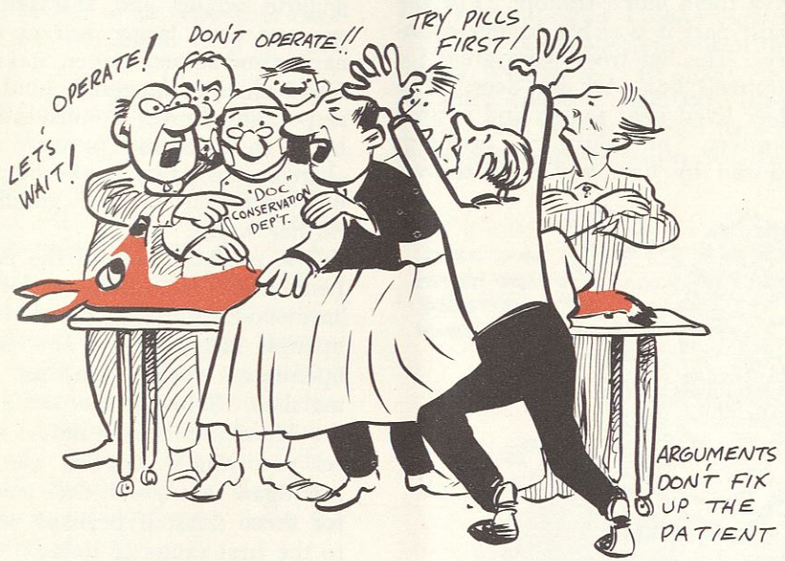
Most deer hunters and tourists do not see this bottle-neck in operation.

The rules are clear: When the woods are full of deer you can't have more, no matter what. If you don't kill off the surplus deer in the fall, you will lose them in other ways and in the meantime they **keep on eating and eating.** This eventually means less and less food, and fewer and fewer deer.

Regardless of the number of hunters, the one buck law takes only about one-half, or less, of the number of deer that should be taken. **When a deer herd is established, at least as many does and fawns as bucks can be taken every year,** on an average.

But the critics say, "No—that's not possible! You can't kill does and fawns and have a deer herd!" The biologists say, "You not only can, but if you don't, the herd eventually falls off regardless of how hunting is restricted." The rate at which this happens varies from place to place but the result is the same.

It is hard to convince people along these lines. Hence, a People Problem, and the tug-of-war continues; with the Conservation Department pulling for a more liberal and realistic harvest from areas where winter food is short or where a shortage is developing; the Save the Deer Protectionist demanding a return to the sacred buck law and the immediate firing of key Conservation administrators. Dropping these same administrators into the Pacific depths was urged by one correspondent.



THE UP AND DOWN OF MICHIGAN DEER

FOR SOME of us, history isn't the favorite subject. But knowing what **has** happened, and why, is a big help in understanding current events. It's that way with deer management too. Looking back, into the ups and downs of the Michigan deer herd, studying what has happened to the land, forests, and deer since primitive times, brings the picture of the present into clearer focus.

"The Good Old Days"

For all practical purposes civilization came to the northern Lower Peninsula of Michigan about 1850. Before that time the wild critters weren't much bothered by humans. A few Indians and trappers didn't give them much trouble. For the most part it was big timber country. The big trees were great for squirrels but poor for deer. The deer lived near marsh and swamp borders, in shrubby openings caused by fires and wind-thrown trees, and in thickets along streams and rivers. Records left behind by explorers and Indians show deer as being present, but not in the vast numbers that we have come to accept as normal today.

Deer are creatures of the brushland. They depend on low-growing trees and shrubs for food. Where there is little low growth, deer will be scarce. A visit to the few remaining stands of big trees today will make it clear that solid stands of big timber produce little deer food and few deer. This fact should be filed away in an easy-to-get-at part of one's thinking apparatus.

Conditions in the Upper Peninsula were pretty much like those just below the Straits except it was a little wilder and snowier, the swamps were larger, winter came earlier and stayed longer, and man-made changes lagged behind corresponding Lower Peninsula dates by 10 to 20 years. In some areas changes caused by lumbering have not yet caught up with conditions farther south.

The southern part of the Lower Peninsula was a different kind of hardwood country—oak and hickory uplands mixed with a few prairie openings, small swamps, and marshes. Some of the swamps in the Thumb area were not so small. As you might suspect, southern Michigan was good deer country for those days, if perhaps not up to the best range of today.

T-i-m-b-e-r!!!

The lumbermen came to northern Michigan about 1850. They were mainly interested in red and white pine but the big swamps of balsam, spruce, cedar, hemlock, and tamarack were also cut. Without realizing it the lumberjack conducted the biggest and best deer habitat improvement program possible.

In the pine and swamp "openings," brush and young trees thrived. Deer food came in thick and by 1870 deer were plentiful in the northern Lower Peninsula. It's worth stating again. Plenty of low, young growth means plenty of deer. This was our first big deer "boom."

By 1890 most of the seemingly inexhaustible pine was gone and the hardwoods—the maples, birches, and basswood, were being taken out.

Three events were about to take place **at the same time** that darkened the Michigan deer picture.

Event Number 1 — The Wide Open Spaces

Before the hardwoods were logged off there were scattered brushy openings in the timber where the pine had been. Now the hardwoods were going, leaving vast areas of wide open country with no brush. We were getting a new kind of nonproductive deer range. Because of Event Number 2 young growth did not follow into the hardwood clearings and it was even eliminated from the old pine clearings.

Event Number 2 — Fire

Tops, limbs, and other debris left behind by loggers is called "slash." When this accumulates and dries out it becomes good tinder. An uncontrolled slash fire is about as hot as they come. Logged-off areas were burned over and over, killing seed trees, seedlings, and seeds. These areas became grasslands and deer do not thrive on grass alone. The deer herd went downhill and it was helped along by Event Number 3.

Event Number 3 — Venison - 2¢ a Pound

Lumber camps and growing cities needed meat, and venison was good and plentiful. Tales about and by market hunters are legion. An average hunter could take 10 or 15 animals a day with dogs, traps, snares, and guns, and in 1878 railroad records alone showed 70,000 carcasses shipped out of the Lower Peninsula. In 1880, rail stations handled 100,000 deer. There were no refrigerator cars in those days, so in warm weather

the traffic was in hides only. The meat was left for the wolves and jays.

Deer were also hunted for sport, but the once-a-year hunting by Great Grandpop and his deer-camp buddies had little effect on the herd compared to the steady pressure of the professionals.

By the early 1880's the sporting qualities of the whitetail were starting to be recognized and we entered the era of increasing legal protection for deer.

Above the Straits of Mackinac

The Upper Peninsula is close to the northern edge of the whitetail range. Low temperatures and deep snow are hard on deer and a short growing season slows down tree and shrub growth.

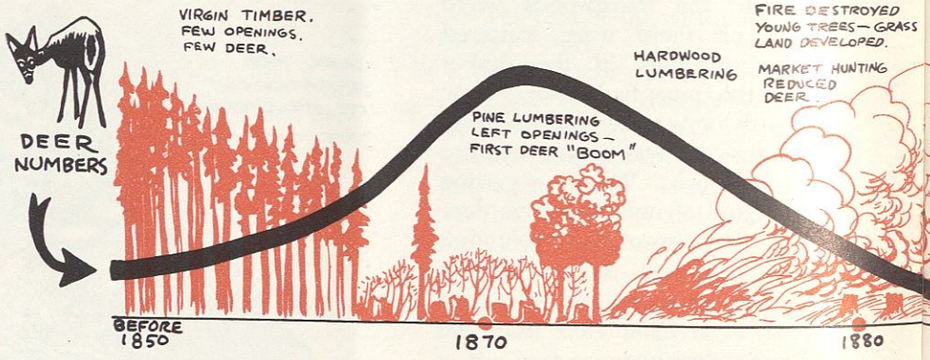
Pine was less plentiful up there and the progress of the lumberjack was slower. Even today relatively big timber is still being cut. Regrowth of timber was slower and the effect of fires was less violent.

While plenty of "Chicago Beef" was shipped from the Upper Peninsula to Milwaukee and points south, market hunting never became as commonplace as it was in the heyday of the northern Lower Peninsula.

The pattern of deer history was the same as below the Straits, but the tempo was slower. Logging, which helps feed deer, has been more continuous and the extremes in deer numbers were less pronounced than in the Lower Peninsula.

Farmland Deer

Early pioneer farming didn't hurt deer in southern Michigan. In fact, cultivated crops probably were considered tasty dessert by deer. As intensive agriculture cleared more and more land and the area became more settled and industrialized, the deer disappeared. Year-round shooting by market hunters and others speeded the decline until, by about 1885, deer were "gone" from the southern half of the Lower Peninsula.



THE DOWN AND UP OF MICHIGAN DEER

WE WERE SCRAPING the bottom of the deer barrel sometime between 1900 and 1910. Old timers tell us that deer tracks were just about as scarce then, as 16-point bucks are today.

No one knew how many deer there were then. They were scarce, but even in those days there probably were more than most people "figured."

The Explosion

In the 40 years that followed the low ebb of the deer herd, things happened fast. It should not have come as a surprise. It had happened earlier in several other states and the same pattern was developing in Michigan.

Three events took place almost at the same time that brought the herd uphill—fast.

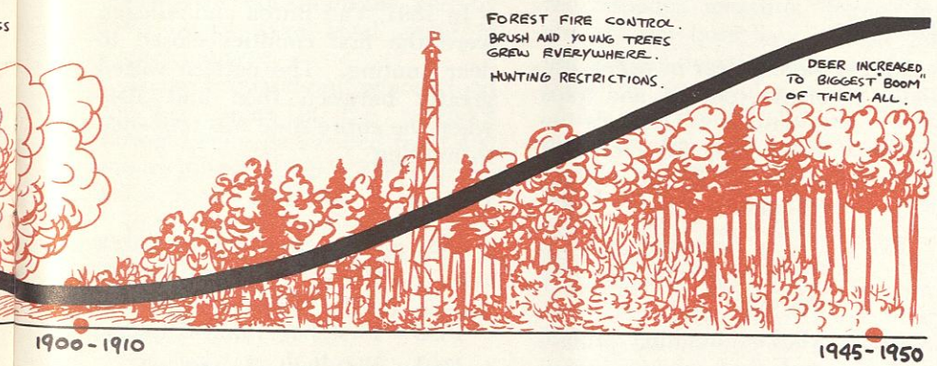
Event Number 1 — Forest Fire Control

It took a while to "sell" the need for the prevention of forest fires and to whip an efficient fire fighting machine into shape. By 1920 it was beginning to pay off.

FOREST FIRES IN MICHIGAN
Acres Burned Annually

Late 1800's —	2,000,000
1910's —	222,000
1920's —	220,000
1930's —	100,000
1940's —	25,000
1950's —	5,000

Remember, there was a great bank of logged-off, burned-over country, seeded by Nature and ready to grow, as soon as fire was controlled somewhat. Increasing control of fire set up Event Number 2.


FOREST FIRE CONTROL. BRUSH AND YOUNG TREES GREW EVERYWHERE.
HUNTING RESTRICTIONS.
DEER INCREASED TO BIGGEST "BOOM" OF THEM ALL.
1900-1910
1945-1950

Event Number 2 —
Deer Food Piles Up

In the 1870's and '80's the good deer country was confined to the relatively scattered logged-off areas but in the early 1900's the entire north country was becoming one big deer food thicket—pretty much inaccessible and with few hunters. Only about 20,000 hunters got the deer season bug in those days.

WHEN

Limiting of the hunting period has provided a variety of seasons. These are only the major changes.

1859 — First deer hunting season set—August 1 to December 31. (Before 1859 there was year-round hunting).

1873 — October 1 to December 31.

Event Number 3 —
Hunting Restrictions Are Set

Restrictions on deer hunting came in four varieties—How, When, Where, and What you could hunt.

HOW

1881 — Taking deer in water, use of pits, pitfalls, and traps outlawed. Deer to be killed only for food and might not be shipped out of state.

1887 — Use of dogs and artificial lights prohibited for taking deer.

1901 — Market hunting prohibited.

1881 — October 1 to November 30.

1883 — November 1 to 30.

1925 — November 15 to 30.

WHERE

In 1891, Van Buren and Allegan were the first counties closed to deer hunting. The pattern varied greatly between then and 1948 when the entire state was reopened to hunting.

WHAT

1881 — Deer may not be taken while in spotted coat or "red" condition.

1895 — First bag limit—5 deer

1901 — Bag limit—3 deer

1905 — Bag limit—2 deer

1915 — Bag limit—1 deer

1921 — Bag limit—1 buck with antlers extending at least 3 inches above the skull.

By 1925, in the northern areas, deer hunting was really getting good. We were rapidly approaching UTOPIA—"a deer behind every bush." By 1930, something had gone wrong in Utopia—in some places, on winter range, deer were eating bushes faster than the bushes could grow. Eaten-out winter yards appeared and starved deer were found almost every spring. Closed counties were opened for buck hunting and by 1948 bucks were legal game in every county.

These browsed-out winter food shortage areas in the northern Lower Peninsula swelled from 100 square miles in 1930 to 8,000 square miles in the mid-50's.

In the Upper Peninsula the over-browsed areas grew steadily in size and number. By the early 50's they too covered 8,000 square miles.

The herds in both the northern Lower Peninsula and the Upper Peninsula hit their over-all peak in numbers between 1945 and 1950. Unfortunately the over-all peak in the food supply was reached 10 to 20 years before that. Of course, there were many local variations in the schedule.

The herd was able to build up after the food peak was reached only by eating up more food than was being produced every year.

Something like the man who is regularly spending more than he makes. It couldn't keep up indefinitely. Michigan deer managers had been predicting a drop in the herd and had recommended the remedial measure. "Scrap the straight one-buck law." "Take all the surplus deer from areas where there is a surplus." But that couldn't be done. The public was not ready for it and they wouldn't permit it. "After all," they said, "the buck law saved the deer once before. You can't kill does and fawns and have a deer herd. The Conservation Department is nuts. What's a little starvation? Let Nature handle the herd management problem, she knows best."

There had been hard, long, and deep winters before and we had pretty heavy starvation losses beginning in the late '20's and running through the '30's and '40's, but the size of these losses was not so well known as it is now. We can be fairly sure that in places the losses were just about as severe as in the more recent, better documented starvation years. In the 20 years after 1930 the herd had its ups and downs with local variations, but generally going up, cutting into its food reserves more and more and getting set for real catastrophe.

The winter of 1950-51 was a blinger from the Keweenaw to Bay City. Deep snow came in the deer season. It was below zero by Christmas and 40° below by February. Two to three feet of snow was on the ground in early April and by late April 50,000 deer were dead from starvation alone. "Let Nature handle it." Sure.

SWALLOWING THE FIRST PILL

THE PILL is deer herd management. It has been called deer herd control. Other terms used are special seasons, antlerless seasons, any-deer seasons, doe seasons, doe and fawn shooting, and slaughter. In some quarters you "kill" a buck, "slaughter" a doe, and "murder" a fawn. These two latter terms apply only to deer. They are never used when referring to rabbits, bears, squirrels, sheep, grouse, ducks, geese, coons, pigs, beavers, or any other critters whose females and young we hunt or trap or eat—they just apply to deer.

In 1941 the Michigan sportsman had his first taste of deer management medicine in two capsules labeled "Allegan County" and "Any Deer for Camp." The first scratched a bit going down but the second tasted so bitter that he spit it out. It was only a small dose at that.

Allegan County

In 1932, local residents released 21 deer into the semi-wild country along the Kalamazoo River bottoms. By 1936 the herd had increased and was eating up the nearby celery beds. Various control measures didn't work out, and in 1941, 37 square miles in Allegan County were opened for a 10-day firearms season on antlerless deer. The same year the entire county was opened for a 14-day bow and arrow season.

Gun hunters were required to have a permit and permittees were selected by a drawing.

There has been a similar season every year since 1941. The special area has been enlarged and more permits have been issued. The herd has spread to adjacent areas and has increased. The local herd

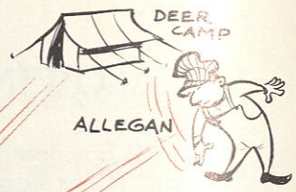
has been held to a reasonable size and 733 does and fawns were taken in 17 consecutive seasons. The season was changed to an any-deer season in 1952 and 26 bucks have been included in the kill since then.

There used to be some fear of wiping out the herd but that has died down. The deer have not been wiped out in the first 17 years of controlled "doe shooting."

Any Deer for Camp — 1941

Before 1941, groups of four or more hunters could buy a camp deer license and take an extra buck for use as camp meat. The 1941 Legislature liberalized that law to permit deer of either sex to be used for camp purposes.

The preceding winter had been hard on deer and several members of the Legislature inspected some of the swamps in the spring. Starved deer were easily found. The Department had recommended that some does and fawns be removed from certain areas by permittees. However, the Legislature passed a substitute measure—a new law to permit taking either bucks, does or fawns for camp use.



Normally 700 to 900 camp deer licenses were sold but in 1941, 19,595 "camps" bought permits and 17,100 camp deer were killed.

The reaction from hunters and non-hunters was violent and even hysterical. Some sportsmen berated the Department, "no use buying a license next year—the deer are all gone." Residents living along the highways complained, "Did you see the thousands of innocent fawns being brought home?" Some northern newspapers stated flatly, "It will be 10 years before we have deer hunting in Michigan again." There were claims of widespread misuse of camp deer permits. Some were true, most exaggerated.

And all this over 17,100 deer—about 1 deer killed for every 2 square miles of northern Michigan. More than 3 bucks were taken in the regular season for every 1 deer taken on a camp license. Under those circumstances the herd couldn't have been hurt.

No matter; the law was repealed and we've had a buck-for-camp law ever since.

Looking back on the situation, knowing what we know now, the lurid claims made then must seem absurd even to the bitterest opponent of antlerless seasons.

INCREASING THE DOSE

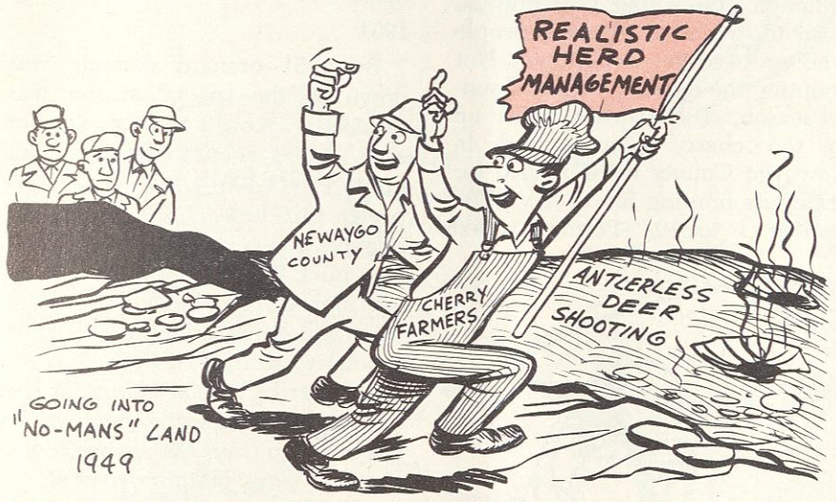
AFTER 1941, it took eight years for things to calm down—eight more years of range destruction, starvation, and malnutrition running unchecked over northern Michigan's winter deer range.

Sometimes the breaks come in odd ways. Farmers and fruit growers in the six counties bordering Lake Michigan from Charlevoix south to Manistee had been suffering more and more damage from a growing deer herd. The losses ran close to one-quarter million dollars annually. The orchardists, becoming desperate, brought their plight to the 1949 session of the Legislature.

More people also were becoming more concerned about the deer food shortage problem. In 1949, the Legislature granted the Conservation Commission authority to set the hunting regulations for deer of either sex in the Charlevoix-to-Manistee orchard country and throughout Lower Michigan south of the city of Clare.

It was the first time that the Conservation Department had authority to do something about controlling the size of the deer herd in areas where there was a shortage of winter food. Unfortunately this authority covered only a relatively small part of the important deer country. In the Upper Peninsula and in the northeastern Lower Peninsula, where the deer/food relationship was extremely critical, no such authority was granted.

A lot of midnight oil went into the planning of the 1949 deer season, plus eight years of experience with the Allegan seasons, experiences in other states, and some research findings in the fruit



country. County agricultural agents and local groups were contacted. Hanging over every decision was the thought expressed three years later in the much-quoted remark, "Take it easy. The deer herd can take it but the public can't."

Sometimes it's hard to judge people. The Lake-Newaygo area had been a hot-bed of anti-doe-shooting sentiment. In that area there had even been opposition to opening the season on bucks in 1936. However, just before the Conservation Commission set the 1949 special season regulations, local sportsmen and residents of Newaygo County requested a special season on does and fawns to maintain a better balance between deer and deer food in their area. This was not a crop damage proposition; this was for the good of the deer herd.

1949

That first special season in 1949 was on the conservative side although you would not think so from the reaction of some people who wrote to the Department. Not counting the regular Allegan County season, 2,383 square miles up in the cherry country and in Newaygo County were opened for antlerless hunting for 10 days, December 1 to 10. Permits issued numbered 23,400 of which 14,700 were actually used to take 4,100 deer—not 2 deer per square mile.

Some people reacted violently, "The deer are gone." "The Boardman River ran red with blood." "The slaughter was horrible!" Others saw more clearly. Afterwards, complaints from orchardists did not decline. Young cherry trees were still being killed or deformed by browsing deer. Summer visitors and some residents couldn't tell there had been a special season.

1950

The 1950 special season was almost a repeat of 1949 except that it was shorter, the area was smaller (2,016 square miles), the number of hunters slightly less (12,300), and the kill a little more than half as many deer (2,130). In 1950, adult bucks could be taken as well as antlerless deer. It was an any-deer season. There also was a notable decline in the amount of "slaughter" talk.

1951

By 1951 orchard damage was down so the special season was reduced accordingly—a smaller area (1,308 square miles), fewer hunters (11,100), but they had pretty fair luck; 2,270 deer were bagged. This country was not the best buck hunting spot in the state—it never had been—but bucks were still being brought out of the special season areas. Fewer growls were heard. At least some of the medicine was staying down. You might even say the patient was showing signs of improvement.

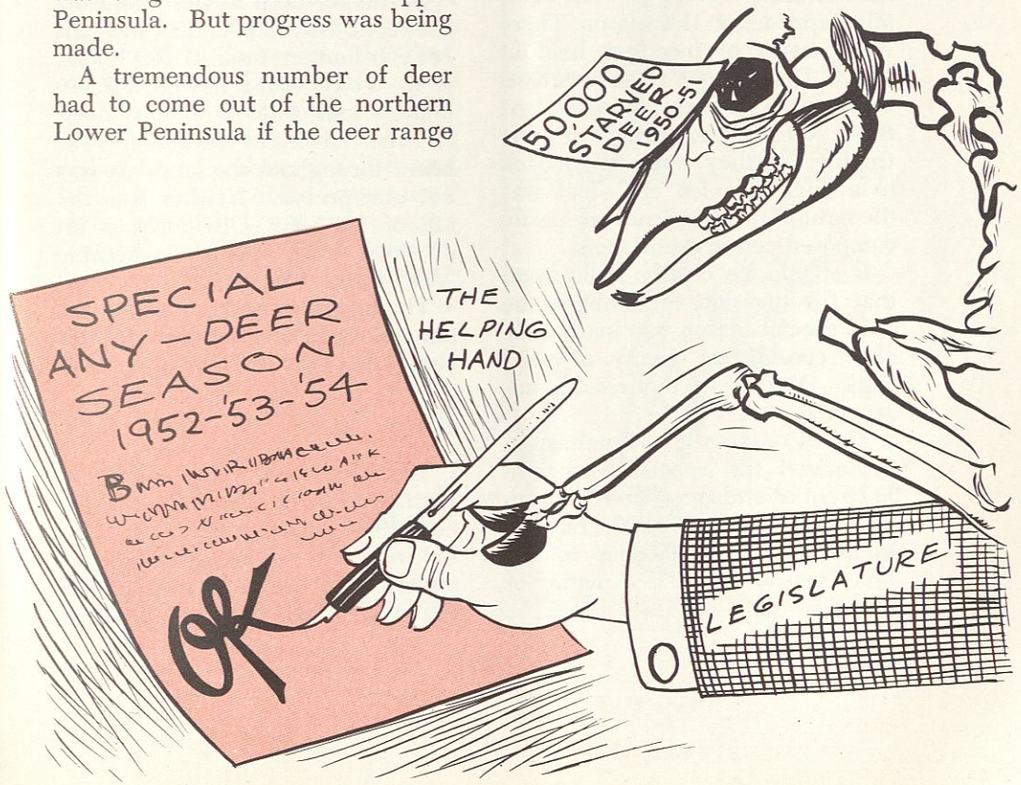
1952—THE ADULT DOSE

THE WINTER and spring of 1950-51 convinced a lot of people that something was wrong with "bucks only" as the law of deer management. Starvation losses ran at least 50,000—90 percent fawns. Again the deer managers were pleading to take some does and fawns as well as bucks out of the over-browsed areas.

The 1951 Legislature set up an Interim Committee to study the situation. They visited different areas and towns, held hearings and talked to people, and in 1952 the Conservation Commission was authorized to set seasons on does and fawns as well as bucks for just 3 years and in the Lower Peninsula only. Opposition to such authority was too great to include the Upper Peninsula. But progress was being made.

A tremendous number of deer had to come out of the northern Lower Peninsula if the deer range was to be helped. The easy way would have been to declare an any-deer season, November 15 to 30. It would have taken a lot of deer, perhaps 200,000 to 300,000 compared to a normal buck kill of 40,000 to 50,000. Wisconsin had tried a couple of any-deer seasons, statewide, and had taken a lot of deer. But Wisconsin could not control the distribution of hunters. As a result, hunters ganged up in some areas, but in other areas too few deer were taken to permit much improvement in the range.

Most important was that a 16-day any-deer season for the northern Lower Peninsula would be just too much of a pill for the Michigan public to digest.



Quotas of permits were considered, but objected to as cumbersome and expensive.

The Conservation Commission finally compromised with a regular buck season—November 15 to 27, followed by 3 days of an any-deer season for all of Zone 2 (the Lower Peninsula, north of Highway M-20, covering 16,750 square miles of deer range).

1952 — No Tragedy

There have been a lot of things said about the 1952 special season. The Game Division office alone received a small truckload of letters both pro and con. One was signed in blood—doe blood it was said. There was good sincere criticism and there were plenty of remarks made by people who had no clear idea of the problem or what actually happened in this season. There were scores of meetings held at which Department representatives took plenty of personal abuse. At times it hardly seemed worth the trouble. "If they want to go back to a buck law, let 'em"—that was the natural reaction from ordinarily composed conservation men.

It should be clearly understood that the decision to establish the 1952 special season was made only after considering plenty of solid facts. Nor were the results unexpected.

The Conservation Commission authorized the special season in 33 counties and the Game Division estimated that 150,000 hunters would take **100,000** deer in the 3-day season. This is a matter of record.

The Commission felt that it would be proper to take extra deer from both food shortage areas and from other not-so-critical areas in order to **prevent** the over-browsing of these better food sections.

Would 100,000 extra deer be too much? One hundred thousand extra deer plus 40,000 to 50,000 bucks out of a herd of at least 500,000 (275,000 does, 150,000 fawns, and 75,000 bucks). One hundred thousand would not be too large a kill from a biological viewpoint—the herd and the range would benefit in the long run but public reaction would be immediate and loud.

The Season

Above the Straits, 96,440 hunters took 19,260 bucks.

In the northern Lower Peninsula between November 15 and 27, 305,860 hunters took 41,200 bucks. In the 3 days that followed, 247,140 hunters took 100,520 "bonus" deer, and the old cry of "slaughter" was heard throughout the land. It was not unexpected. Neither was the kill of 100,520. Obviously, a lot of "old buck hunters" became "doe" hunters in 1952.

The biggest mistake, if there was one, about 1952 was that it did not come sooner.

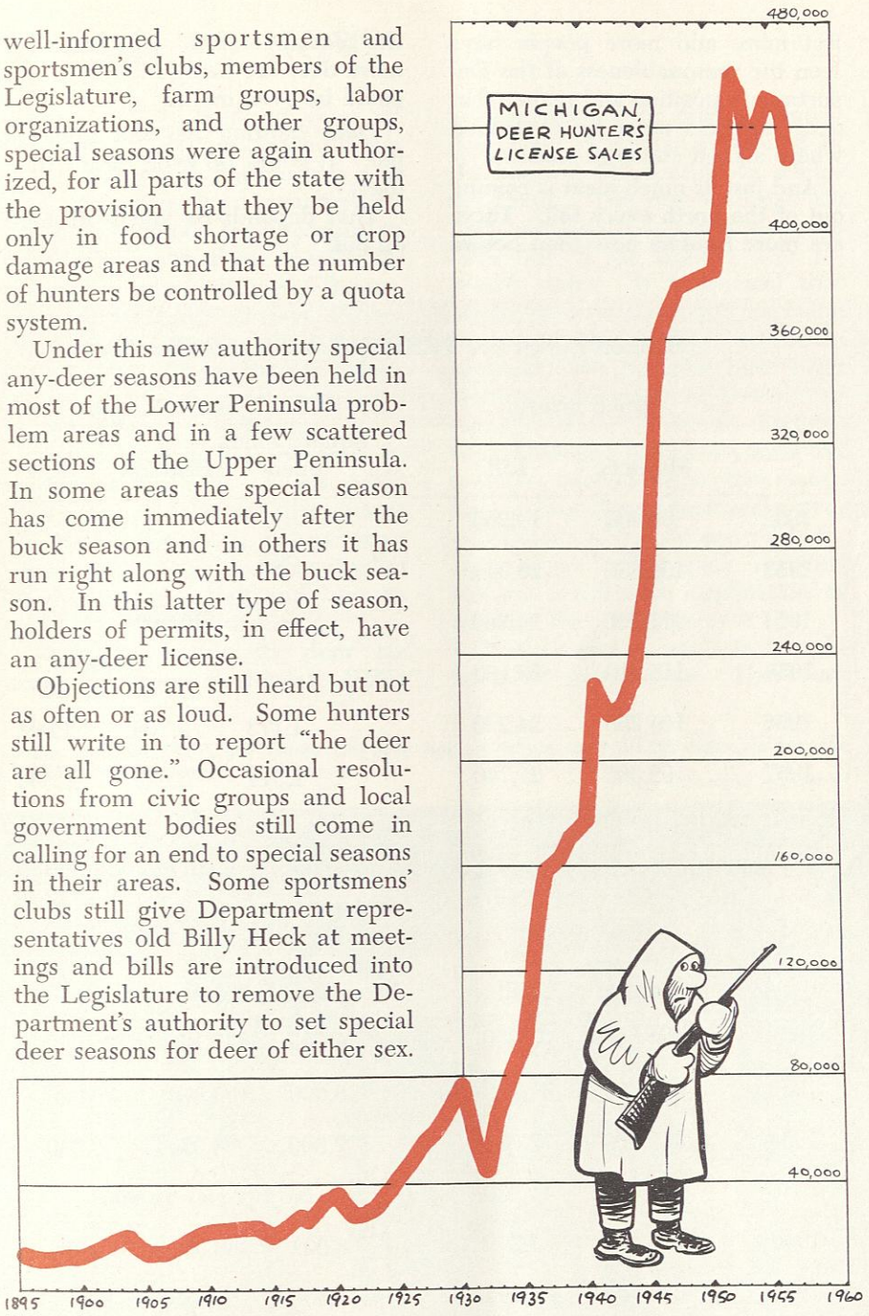
After 1952

Special seasons were held in the northern Lower Peninsula in 1953 and 1954. The 1955 Legislature did not renew the Commission's authority to establish special seasons. In 1956, with the help of

well-informed sportsmen and sportsmen's clubs, members of the Legislature, farm groups, labor organizations, and other groups, special seasons were again authorized, for all parts of the state with the provision that they be held only in food shortage or crop damage areas and that the number of hunters be controlled by a quota system.

Under this new authority special any-deer seasons have been held in most of the Lower Peninsula problem areas and in a few scattered sections of the Upper Peninsula. In some areas the special season has come immediately after the buck season and in others it has run right along with the buck season. In this latter type of season, holders of permits, in effect, have an any-deer license.

Objections are still heard but not as often or as loud. Some hunters still write in to report "the deer are all gone." Occasional resolutions from civic groups and local government bodies still come in calling for an end to special seasons in their areas. Some sportsmens' clubs still give Department representatives old Billy Heck at meetings and bills are introduced into the Legislature to remove the Department's authority to set special deer seasons for deer of either sex.



But more and more people have seen the reasonableness of the Department's position and realize that deer numbers must be controlled where a food shortage exists.

And just as much meat is coming out of the north every fall. There are more hunters now than before the special seasons. In some areas more deer are being killed. There could be even more.

Deer hunting has not gone to pot. It could be even better than ever.

That depends on you from here on out.

RECENT UPPER PENINSULA SEASONS

	Buck Season		Special Season		
	Hunters	Kill	Square miles open	Hunters	Kill
1952	96,440	19,260			
1953	109,830	26,340	No		
1954	111,700	24,360	Special		
1955	115,110	29,160	Seasons		
1956	104,250	24,220	1,173	3,704	1,091
1957	108,385	21,740	1,314	3,885	1,560

RECENT NORTHERN LOWER PENINSULA SEASONS

	Buck Season		Special Season		
	Hunters	Kill	Square miles open	Hunters	Kill
1952	305,860	41,200	16,750	247,140	100,520
1953	309,660	42,520	8,000	100,870	26,620
1954	285,160	32,820	7,300	38,020	8,330
1955	275,080	41,930	No Special Season		
1956	296,120	34,240	8,091	38,556	11,559
1957	283,490	38,195	10,530	40,845	13,319

WHERE TO NOW?

OVER ONE hundred years of history has been boiled down to a few pages to outline how and why the deer herd reached its present condition. It's important to be familiar with these events because they point out one of the unalterable truths about deer. Where there is little deer food there will be few deer. Where food is plentiful, deer will do well even with liberal hunting regulations.

The whitetail has become so important because of his wide range and abundance that almost all North American conservation agencies have tried to find out what keeps him operating and how to make the best use of him.

Michigan began its deer research program in the late 1920's with surveys of the critical wintering areas. Michigan is located in the heart of the continent's whitetail range. The raw material has been put in our lap and we have been one of the leading deer research states. It is ironical that Michigan, so favored, has not made more progress in deer herd management. We actually have been cited as an example of how not to manage deer. Research findings from Michigan have been accepted and have proved out in other states. Yet misplaced sentiment and a general refusal to believe proved facts, have slowed Michigan's progress toward a full-scale application of modern deer management.

Thirty years of work has taught us a lot about deer. There are

From 1952 to 1957, the Game Division has examined over 50,000 deer during the hunting seasons alone.

(Photo by Harrington)

plenty of gaps in the picture. Nobody knows everything and certainly that is true about the deer managers. Some of the seemingly simplest questions cannot be answered completely yet. Some of the apparent answers still need the test of time.

Research has also shown up certain beliefs that are not true. In the early days there was neither the time nor the manpower to dig out the truths about deer. Even the Department of Conservation didn't always recognize the urgent need for such digging. Some Department statements made about deer in the 1920's are so conservative in the light of present knowledge that it is embarrassing to read them. Even the biologists and deer managers have almost always underestimated the adaptability, resourcefulness, and multiplication powers of deer.

Since 1952, the Game Division has examined over 50,000 deer during the hunting seasons alone.

Thousands of square miles of deer wintering areas have been investigated and mapped.

Nearly a thousand penned deer have been studied.

Experiments have been run on deer food growth and consumption, deer diseases, and fawn production.

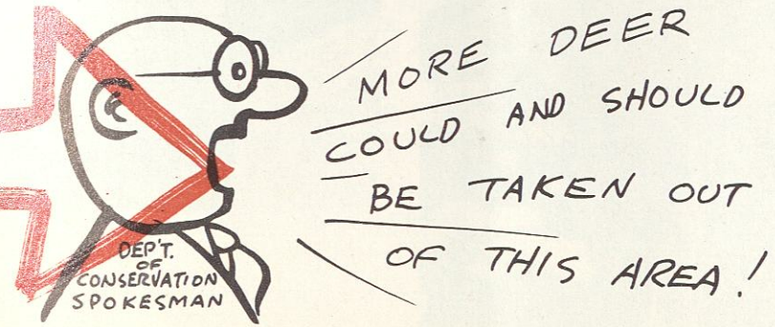
Antler development, deer weights, and fawn production have been tied in with food conditions, and the effects of the "big" predators on deer have been noted.

The best statistical workers at the University of Michigan and Michigan State University have been consulted in all recent research work.

We have even researched into the deer hunter himself and the work has been fruitful and important. To some extent it has been an inward look because the fellows that have done this research work are themselves deer hunters. Every fall the bug hits them just as hard as the rest of the 400,000 plus nimrods. They've "froze their feet and missed their bucks" along with everybody else and the same questions have come into their heads as have occurred to you.

Here are some of the answers—the best available.

The rest of this booklet covers what we know about deer and deer range. Space is short so all of the supporting facts and figures cannot be given. Thirty years of Michigan records alone would fill a bank vault and on top of that we have combed the findings of all of the other big deer-producing states and provinces.

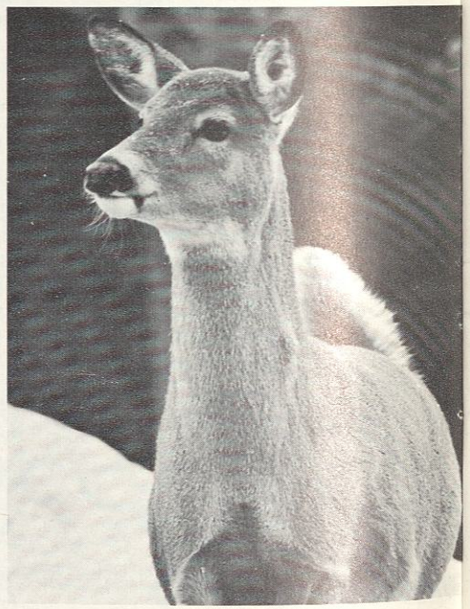


(Photo by Warren)

Here is the Leading Character — the White-tailed Deer. Above is the buck, his antlers full grown but still in velvet. At the right is the doe and below the fawn — a few days old.

(Photo by Hastings)

(Photo by Harrington)



THE LEADING CHARACTER

THE WHITE-TAILED deer is a remarkable animal. He and his ancestors have lived through some pretty drastic changes in home conditions. They've been in North America for some 20 million years and have survived several glacial periods. Deer have even outlived the saber-toothed tiger, which was no small accomplishment. Anyone who is concerned that coyotes, wolves, or bobcats are going to whittle away "his" deer can recall this comforting fact.

Deer saw the rise and decline of the American Indian and of frontier settlers and market hunters, and they'll be here long after "us red-coats" have hung up our shootin' irons.

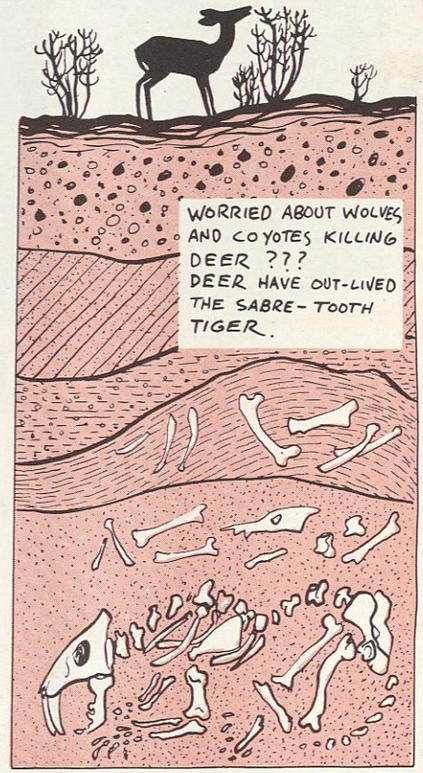
There are 30 separate varieties of white-tailed deer in North America. Michigan's is the northern whitetail and it's the only kind native to this state.. The mule deer does not come farther east than western Minnesota so some of those big bucks seen from time to time are not from crosses with the western "muleys".

Some of us like to tell tales of old swamp bucks with big flat hoofs, short legs, heavy antlers, and dark coats. Some have red eyes and can dodge a 30-30 slug. Actually there "ain't no such animal" but it's fun to pretend.

A buck may look as big as a horse, busting down through the popple, but he's probably only about 3 feet high at the withers. He might go 3-½ feet. Does are somewhat smaller.

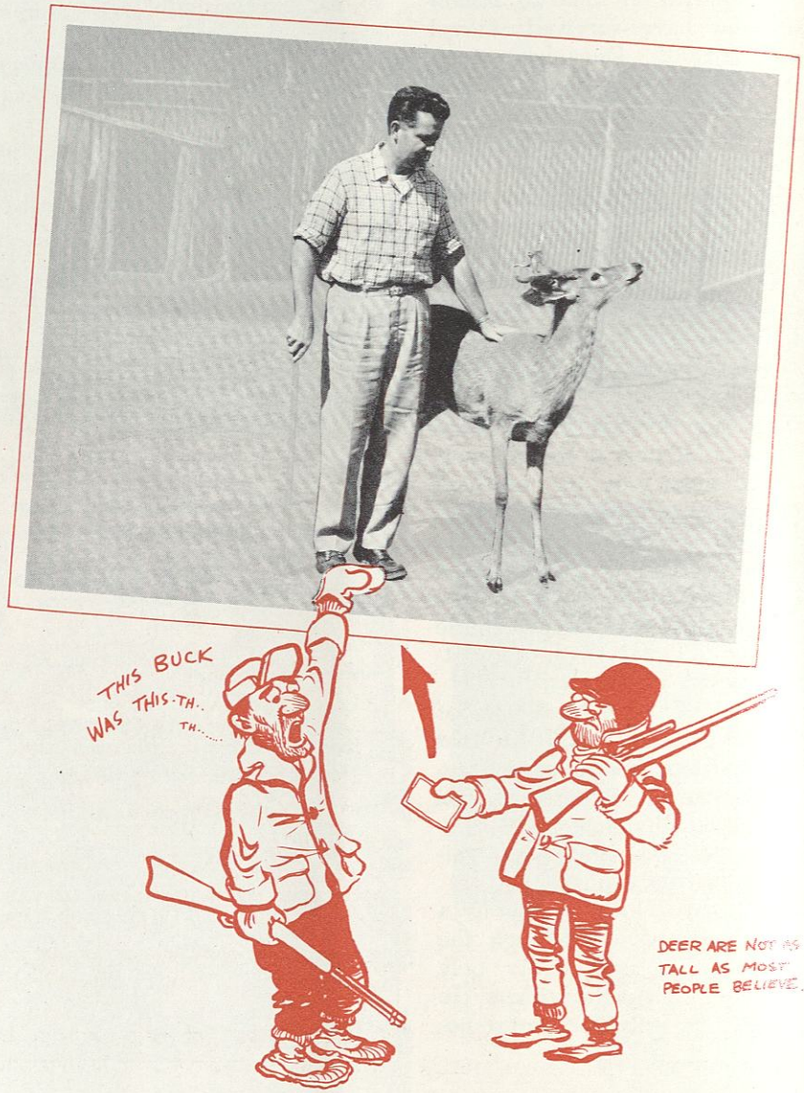
Fawns are white-spotted on a bright bay background when born. They lose the spots between 3 and 4 months of age and by November resemble their mother—so much so that a surprisingly large number of hunters cannot be counted on to tell a doe from a fawn, even when the deer is tied to a car fender.

Adults get their brownish gray winter coats in September or very early October. This heavy coat is



long and thick and each hair has air spaces in the core to act as much-needed insulation. This gray or "blue" coat is shed in late spring and the shorter, thinner "red" coat comes in. After a long, hard winter, deer probably feel pretty rough. This shedding process makes them look worse than they feel.

Pure albinos with pink eyes and skin are rare, but partially white deer that resemble pinto horses in color are taken every year.



HOW OLD IS MY DEER?

HUNTERS USUALLY ask this question either to satisfy their curiosity or to settle arguments over who shot the oldest deer. The deer manager has more than a curious interest in deer ages.

During and right after each hunting season, thousands of deer from every part of the state are "aged." Most of this aging takes place at highway deer checking stations, special checking stations, locker plants, conservation headquarters, and hunting camps, but you might even run into a deer-ager right in the woods—maybe even before your deer stops quivering.

If we're comparing one deer with another, it's absolutely necessary that both deer be the same age. We'd be off base if we compared the antler development of a 1-½ year old buck with that of a 2-½ year old "veteran."

Sometimes the number of deer of a certain age in the season kill will be unusually small. For example, the percentage of 1-½ year old bucks in the kill might be lower than usual. This would show that something had happened to the fawn crop during the past year.

Sometimes a sudden increase in the number of older deer (2-½ years old or older) shows up. This happened in 1955 and it was preceded by a low buck kill in 1954. Evidently the low kill in '54 was not due to a shortage of young bucks. The 1-½ year old bucks were there in 1954 but hunters didn't catch up with them until 1955 when they showed up as 2-½ year olds.

Aging gives some idea of the percent of the buck herd that is taken each year. In the northern Lower Peninsula a larger proportion of the bucks are shot than in the Upper Peninsula. Since this heavier kill isn't hurting the Lower Peninsula herd, it follows that more Upper Peninsula bucks could be taken.

How Not to Age Deer

You can't tell the age of either a deer or a movie actress by asking or looking. Nor can you tell a buck's age by his antlers.

The number of points on a 1-½ year old buck will vary from spikes to 10 points depending on how healthy and well fed he is, which depends largely on winter food conditions where he lives. Antler diameter just above the skull varies from ½ inch to 1-½ inches.

How to Age Deer

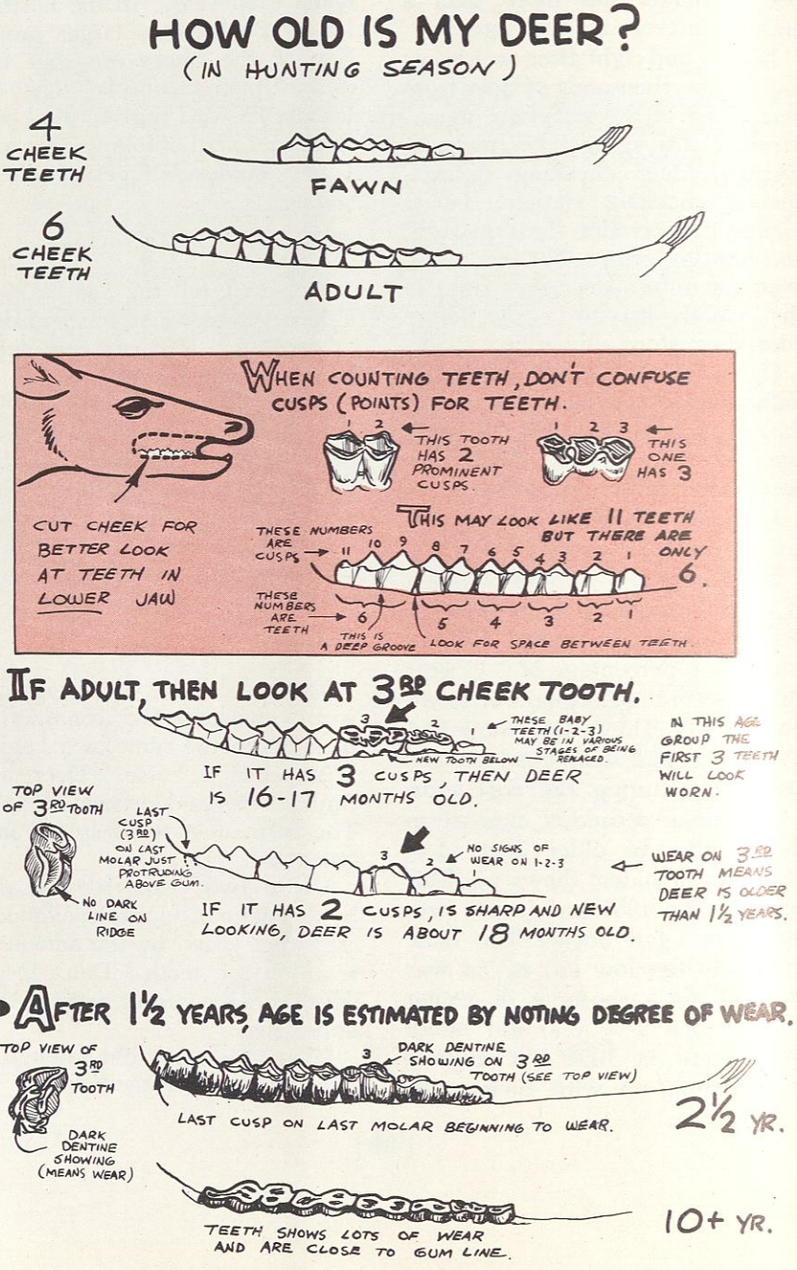
The best known way to age deer is by checking the condition of their teeth; the same as a veterinarian ages a horse. Deer have "milk" teeth and permanent teeth. The permanent teeth are all in at two years.

Up to two years, we age deer by the stage of tooth development; after two years, by the amount of wear on the teeth. Don't forget; deer don't have front teeth in their upper jaws.

Some does get old enough to wear down their teeth below the

gum line. We know of one semi-wild Michigan deer that reached 17 years. Other states report captive deer living 20 years. Few deer over 10-½ years have shown up in over 50,000 wild Michigan deer examined since 1952.

With bucks, it's a short, but merry life even in the Upper Peninsula where there are fewer hunters and plenty of places to hide. Only two or three percent of the bucks reach 5-½ years of age.


HOW OLD IS MY DEER?
(IN HUNTING SEASON)
4 CHEEK TEETH
FAWN
6 CHEEK TEETH
ADULT
WHEN COUNTING TEETH, DON'T CONFUSE CUSPS (POINTS) FOR TEETH.
THIS TOOTH HAS 2 PROMINENT CUSPS.
THIS ONE HAS 3
CUT CHEEK FOR BETTER LOOK AT TEETH IN LOWER JAW
THIS MAY LOOK LIKE 11 TEETH BUT THERE ARE ONLY 6.
THESE NUMBERS ARE CUSPS
THESE NUMBERS ARE TEETH
THIS IS A DEEP GROOVE
LOOK FOR SPACE BETWEEN TEETH
• IF ADULT, THEN LOOK AT 3RD CHEEK TOOTH.
THESE BABY TEETH (1-2-3) MAY BE IN VARIOUS STAGES OF BEING REPLACED.
NEW TOOTH BELOW
IN THIS AGE GROUP THE FIRST 3 TEETH WILL LOOK WORN.
IF IT HAS 3 CUSPS, THEN DEER IS 16-17 MONTHS OLD.
TOP VIEW OF 3RD TOOTH
LAST CUSP (3RD) ON LAST MOLAR JUST PROTRUDING ABOVE GUM.
NO SIGNS OF WEAR ON 1-2-3
WEAR ON 3RD TOOTH MEANS DEER IS OLDER THAN 1½ YEARS.
NO DARK LINE ON RIDGE
IF IT HAS 2 CUSPS, IS SHARP AND NEW LOOKING, DEER IS ABOUT 18 MONTHS OLD.
• AFTER 1½ YEARS, AGE IS ESTIMATED BY NOTING DEGREE OF WEAR.
TOP VIEW OF 3RD TOOTH
DARK DENTINE SHOWING (MEANS WEAR)
DARK DENTINE SHOWING ON 3RD TOOTH (SEE TOP VIEW)
LAST CUSP ON LAST MOLAR BEGINNING TO WEAR.
2½ YR.
TEETH SHOWS LOTS OF WEAR AND ARE CLOSE TO GUM LINE.
10+ YR.

BUTTONS, SPIKES, AND ROCKING CHAIRS

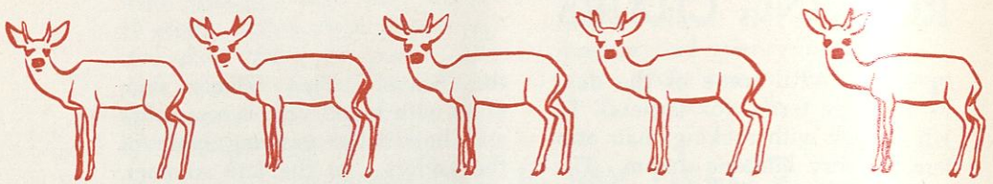
THESE ARE some of the deer hunter's terms for antlers. To kill a buck with rocking-chair antlers is every hunter's dream. The Rocking Chair Buck is surpassed in antlered magnificence only by the Brush Heap Buck. We've learned a lot about antlers and some of the knowledge **about** the antlers is more important than the antlers themselves.

Antlers are not horns. Horns are hollow or nearly so, and once grown are not shed. Sheep, goats, cattle, and bison have horns. Deer, elk, and moose have antlers. Antlers are solid bony growths from the skull. They are shed **every** winter and regrow **every** spring. In the Michigan latitudes, growth starts in late April or early May. While growing, the antlers are covered with skin and short hair known as the "velvet." This velvety skin, filled with blood vessels, nourishes and builds the growing bone of the antlers. In the late summer, the blood supply is cut off, the skin dies and peels off, and the antler hardens. In early winter, the cells at the base, or burr, break down and the antler falls off. Within a year, mice and other gnawers usually have consumed them.

Antlers are among the fastest-growing animal tissue known to man, and it takes a high level of nutrition in an animal to produce a normal set.

Antlers are sort of like deer-camp whiskers – something for males only. Injuries or abnormalities involving the sex glands often cause delayed and distorted growth and late shedding of velvet or no

1½ YEAR BUCK WITH ANTLERS LESS THAN 3"
STUNTED ANTLERS IN FOOD SHORTAGE AREAS MEANS:
1. HUNTER CHEATED OUT OF A BUCK SEASON TARGET.
2. ANOTHER MOUTH TO FEED DURING WINTER.
16
!!!
ALL DOES!



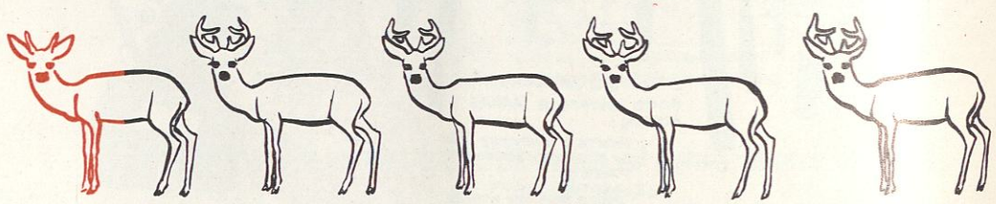
shedding at all. Castration while in the velvet causes a buck to drop his antlers and thereafter his "antlers" will be something less than rocking-chairs.

Antlered does are reported every year. In the wild this is caused by abnormal hormone secretions. It can often be brought on experimentally by injecting a doe with certain hormones.

A button buck is a buck fawn, or a really scroungy adult. Hunters often get close enough to see the little one-inch bumps on his head and 99.99 percent of all buttons are covered with skin. The next fall, if he lives that long, the button buck will have antlers. If he gets plenty to eat, he'll be a nice fork-horn or 6-point or even a small 8- to 10-point. If short rations are hard on him, he'll be an average spike buck and if he just about makes it through the winter, he'll have spikes less than 3 inches long. Heredity plays its part too, but experiments show that its effects are far overshadowed by the general physical condition.

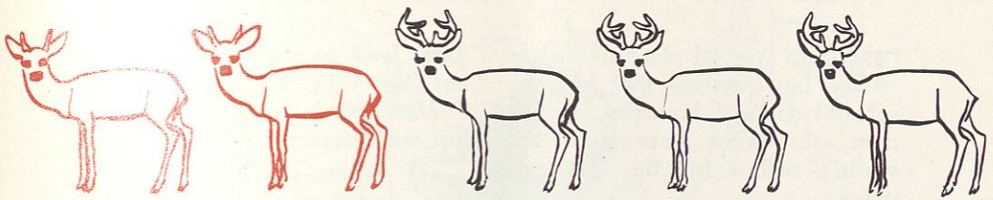
Who Cares! A Spikehorn is Good Enough for Me!

Why all this fuss about antlers? There's a good practical reason for growing bucks with legal antlers in not more than 1-½ years. If a buck is not a legal target for his second buck season, he deprives the hunter of a deer. Now that's OK for the deer, but what about when the kids greet you with, "Did you get a deer, Dad?" Furthermore, that buck has to be **fed an extra winter** to get him into the legal size class and we just don't have **any** extra winter food. It's a question of having to keep the merchandise on the shelf an extra year—bad business. Under modern range conditions and hunting pressure, we should take bucks soon after they fulfill their duties as breeders and before they eat too much green stuff.



ONLY 5% OF THE 1½ YR.-OLD BUCKS IN

IN NORTHEASTERN LOWER PENINSULA FOOD-SHORTAGE AREAS, 70% OF 1½ YR-OLD BUCKS ARE SPIKE BUCKS.



Just how serious is this short spike situation? In severe "starvation" areas, it's possible to have 50 percent of the 1-½-year-olds with sublegal antlers. We have even found otherwise normal-looking 2-½-year-olds with 2-inch spikes.

In our northeastern Lower Peninsula food shortage areas, about 70 percent of the 1-½-year-old bucks are spike bucks. In southern Michigan where food is plentiful, only 5 percent have spikes. The rest have small to medium-sized racks.

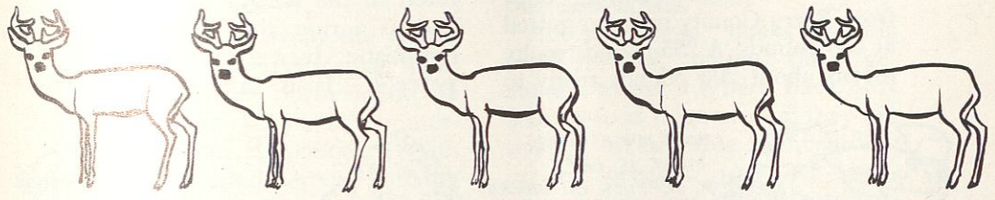
Antlers themselves may not be important, but they're like a doctor's thermometer. When it says, "fever," something's wrong. Skimpy antlers mean short rations and that means a down-hill deer herd.

After the removal of 100,000 extra deer from the northern Lower Peninsula in 1952, our breeding herd was in good shape foodwise, and antlers on yearling bucks were pretty good. However, this happy situation didn't last more than a couple of years at best. Since then, public opinion has allowed only watered-down special seasons and antlers are smaller in the poorest food areas.

In the Upper Peninsula where the first special seasons in 1956 and 1957 have amounted to little more than a buck season, smaller antlers have accompanied a general decline in food conditions and deer numbers.

On the other hand, in the better food parts of the Lower Peninsula, antler sizes hold up.

All of this talk about small antlers on Upper Peninsula bucks may be confusing. After all, don't most of those "rocking chair" bucks come from up there? Most of them do, but you will find that they have lived longer up there—long enough to grow decent antlers. Age for age the best racks are grown by the best-fed bucks.



FOOD-RICH SOUTHERN MICHIGAN HAVE SPIKES.

WEIGHTY FACTS

THIS IS A good place to answer the big question that hunters, school-kids, and homesick service men ask. What state holds the world's record for the "biggest" deer?

As far as we know, the world's record is a Michigan buck, killed in 1919 near Trout Creek in the west end of the Upper Peninsula. It dressed out at 354 pounds and must have been at least 70 pounds heavier on the hoof. Some 200-pounders are still coming out of the woods, but a dressed weight of 100 to 160 pounds would take in almost all Michigan bucks. Most adult does dress out between 80 and 110 pounds, while 50 to 65 pounds would cover most fawns in November.

A deer and a deer hunter start life about even-Stephen. Buck fawns and buck hunters average about 7-½ pounds at birth. Doe fawns run a little lighter.

The relation between dressed and live weight is fairly constant, although smaller deer tend to have a larger proportion of innards. An 80-pound fawn will dress out about 60 pounds. A 125-pound spike-horn from Oscoda County dresses down to about 100 pounds while a nice 165-pound yearling buck from Barry County ends up gutted at 130 pounds. A 255-pound trophy means about 200 pounds ready to drag back to camp. Roughly deer are about ⅓ "blood 'n' guts."

How much good meat you end up with depends on many things:

(1) Where you hit the deer and what you hit it with.
(2) Size.
(3) Physical condition.
(4) Your butchering ability.

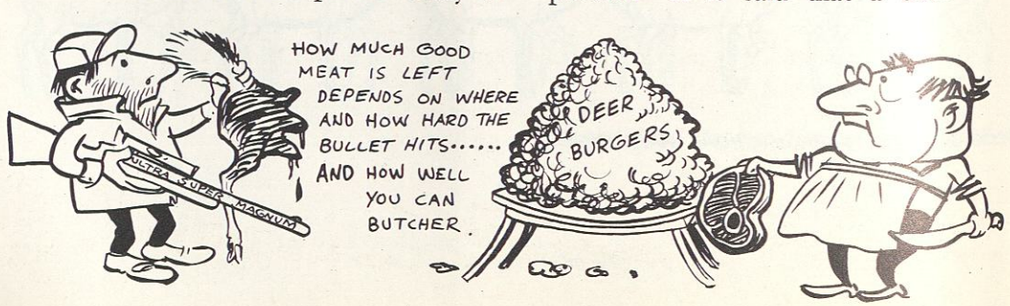
APPROXIMATE EDIBLE MEAT YIELD

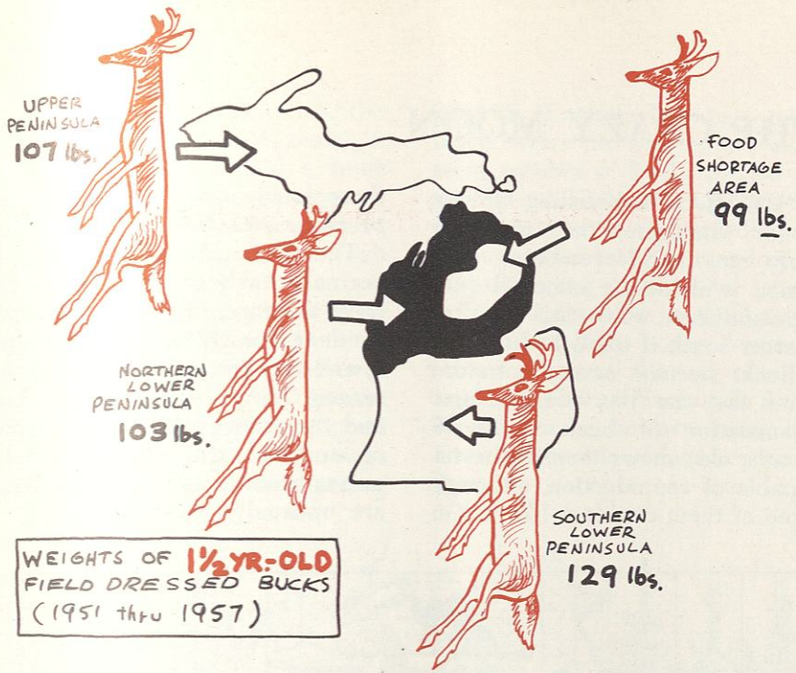
Field-dressed Weight	Meat
60-pound fawn	30-35 pounds
100-pound yearling	60 pounds
200-pound "dream"	150 pounds

Deer Weights vs. Deer Food

The deer manager is concerned more with weight as an index to deer nutrition than he is with world's records, although records for trophy purposes are of interest. They are like the icing on the cake.

Every hunting season, deer weights are obtained at the same places and stations where ages and antler measurements are determined. Experimental penned deer are weighed at regular intervals to provide 'round-the-calendar information. Hunters are keenly interested in the weight of their deer, and as a rule, their estimates are optimistic by about 25 to 30 percent. It is said that a deer carcass gains weight at the rate of about 15 pounds for every ¼ mile it has to be dragged. Hunters who visit checking stations year after year get pretty good at guessing weights.


HOW MUCH GOOD MEAT IS LEFT DEPENDS ON WHERE AND HOW HARD THE BULLET HITS..... AND HOW WELL YOU CAN BUTCHER.
ULTRA SUPER MAGNUM
DEER BURGERS


UPPER PENINSULA 107 lbs.
NORTHERN LOWER PENINSULA 103 lbs.
FOOD SHORTAGE AREA 99 lbs.
SOUTHERN LOWER PENINSULA 129 lbs.
WEIGHTS OF 1½ YR.-OLD FIELD DRESSED BUCKS (1951 thru 1957)

Dressed weight, like antler development, tells how well the deer has been eating. When thousands of weights of known-age deer from all over are recorded, you get a good idea of food conditions in different areas. Where average weights are good, each deer is getting a reasonably adequate diet. Where weights are low, they are not.

Yearling bucks from the northeastern Lower Peninsula food shortage area are out-weighed by their southern Michigan counterparts by some 30 pounds. With older bucks, the difference runs up to 50 pounds.

The general improvement in weights from 1951 through 1953 in the northern Lower Peninsula, though small, was significant. A combination of fewer deer over winter following the removal of 100,000 extra deer in 1952, plus a couple of mild winters, started the herd uphill weightwise. But since then, we have not been taking enough deer. Food supplies have gone down again and so have weights.

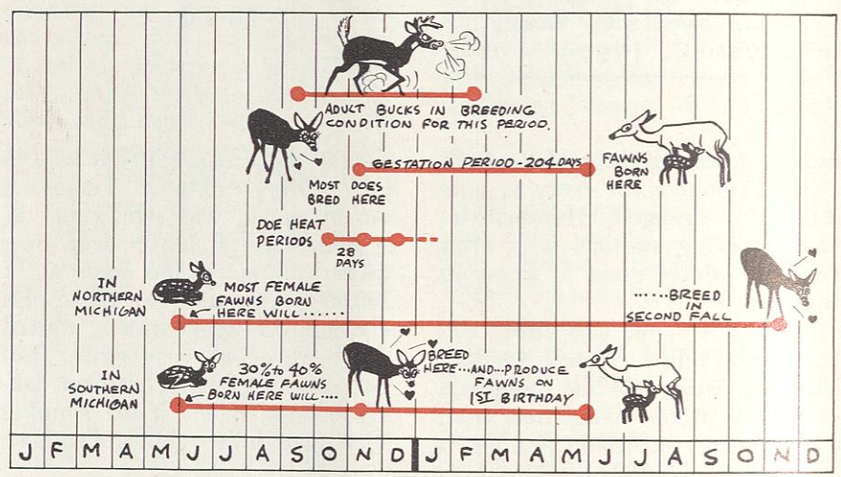
In the Upper Peninsula, there has been a slow decline in weights and the trend will continue unless some of the winter browsing pressure is removed.

Are Michigan bucks getting smaller? Not where they get enough to eat. Where there isn't enough food to go around they are smaller. It isn't due to inbreeding or any peculiar brand of hocus pocus; they just don't eat well enough most winters.

THE CRAZY MOON

THE PEAK of breeding activity for Michigan deer comes in early to mid-November. This period is about the same all over the northern whitetail range. Farther south it tends to be later.

Bucks become sexually mature when they are 1-½ years of age. Examination of buck fawns (6 months old) shows them to be incapable of reproduction, although some of them don't act like it. On the other hand, doe fawns grow up fast and if they are well fed they can be successfully bred their first fall.


ADULT BUCKS IN BREEDING CONDITION FOR THIS PERIOD.
GESTATION PERIOD - 204 DAYS
FAWNS BORN HERE
MOST DOES BRED HERE
DOE HEAT PERIODS
28 DAYS
IN NORTHERN MICHIGAN
MOST FEMALE FAWNS BORN HERE WILL.....
.....BREED IN SECOND FALL
IN SOUTHERN MICHIGAN
30% to 40% FEMALE FAWNS BORN HERE WILL....
BREED HERE...AND...PRODUCE FAWNS ON 1ST BIRTHDAY
J F M A M J J A S O N D J F M A M J J A S O N D

Adult bucks are in breeding condition from September through February. Does are not constantly receptive to bucks. Their heat period lasts only 24 to 36 hours. If a doe is not successfully bred, she will come into heat again in about 28 days. She could have three such periods during the breeding season.

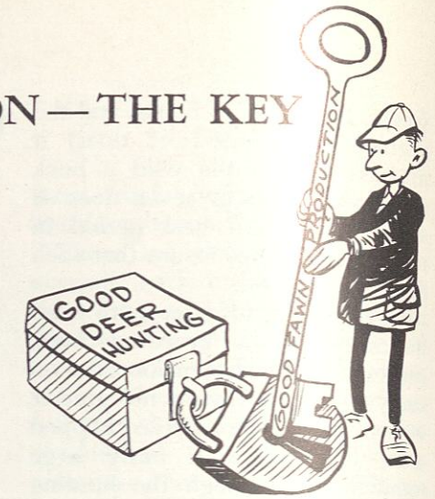
There are always cases of abnormally early or late matings, but these are rare. Fawns born in late summer or early fall are the spotted fawns that are reported in hunting season. There are very few of them and they don't stand much chance of survival through the winter unless weather and food conditions are unusually favorable.

Under ideal conditions with penned deer, a buck can service 20 does. In the wild it doesn't work out this way. A buck may court a doe for a couple of days before mating and he may hang around afterward for a day or so. Hence he might be out of circulation for perhaps four or five days, per doe serviced. Adding all of the knowns together (the normal peak breeding period of about 3 weeks, the habits of bucks, and the normal heat period of does) it appears that in the wild a buck could service six or seven does. A second and third heat period in unbred does helps insure that each doe will be bred.

In Michigan, to date, there is no indication of a breeding buck shortage. The proportion of does carrying no fawns is no greater where the buck crop is clipped close than where a fairly large number live through the hunting season. Enough breeding takes place before the season, or a sufficient number of bucks survive (or enough of both in combination), to produce a more-than-adequate fawn crop to stock the range up to and exceeding its capacity.

There are areas in the heavily hunted part of the Lower Peninsula where almost all the 1-½ year old bucks are shot off every fall. Bucks rarely live to be two years old. Even so, there is a fawn crop every year.

FAWN PRODUCTION—THE KEY

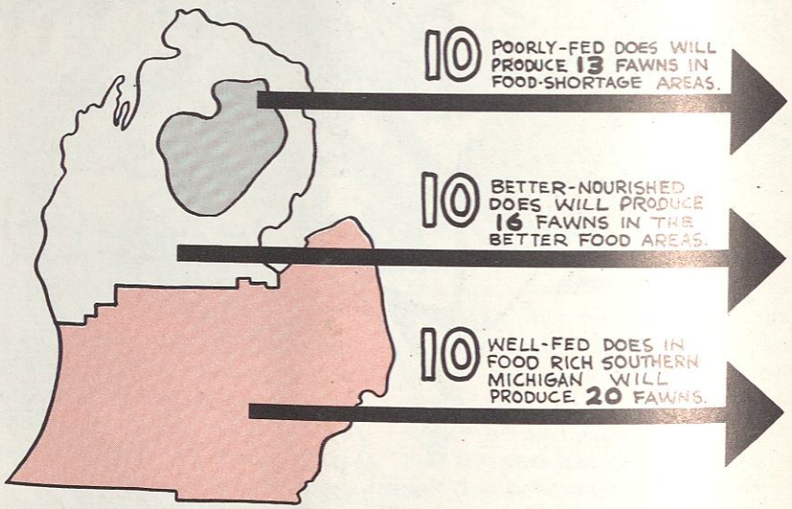


A DOE carries her fawn, or fawns, about 204 days and in Michigan most fawns are born during the last few days of May and in early June. Twin fawns from healthy adults is the rule. Triplets are not uncommon, but quadruplets are rare. Young does, or older animals not up to par physically usually have singletons.

As far as we know, there is no such thing as a "barren doe" because of old age. Captive and semi-wild does have borne fawns every year until their death at 17 to 20 years. At the other end of the scale, a large percentage of year-old does will produce a single fawn, provided their level of nutrition is high. The shot-in-the-arm that this gives the deer herd is often overlooked. In a healthy herd, living on good winter food where winter conditions are not too severe, between 30 and 40 percent of doe fawns will conceive and drop a fawn when they are only one year old.

The largest contribution to the herd probably is from the 2 and 3 year-old does. There are lots of them, and if food is adequate they will produce a statistical 1-½ to 2 fawns apiece. The older gals (over 5 years) contribute little to the herd, mainly because relatively few does get to be that old. Life in the wild is tough.

Fawn production is so important in determining the whole future of the deer herd and deer hunting that we spend a lot of time, money, and energy collecting information about it. This research should be of interest to all deer hunters.

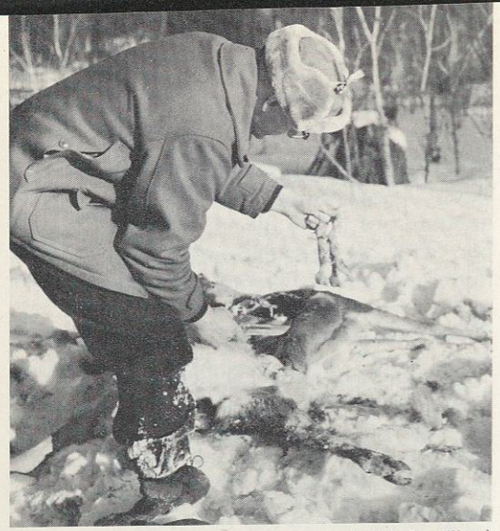

10 POORLY-FED DOES WILL PRODUCE 13 FAWNS IN FOOD-SHORTAGE AREAS.
10 BETTER-NOURISHED DOES WILL PRODUCE 16 FAWNS IN THE BETTER FOOD AREAS.
10 WELL-FED DOES IN FOOD RICH SOUTHERN MICHIGAN WILL PRODUCE 20 FAWNS.

Deer x Deer = Deer

Most people do not realize how fast deer multiply even under less than ideal conditions. In 1928, 4 does and 2 bucks were fenced into the 1,200-acre George Reserve in Livingston County. After six springs there were 160 deer in the enclosure. Similar examples of this rabbit-like multiplication come from Illinois, Missouri, New York, Pennsylvania, and Texas to mention just a few places. Remember, with deer the interest rate is high, at least 30 percent per year.

Fawns Versus Food

It is basic in animal biology that more young are produced than are necessary to carry on the species. This is true of ants, elephants, people, and deer. The better nourished a doe is, the more fawns she produces, and the better chances her fawns have for survival after birth. One of the principles of deer herd management, or livestock raising, can be stated briefly: If, on a given amount of food, we carry a smaller number of bred females over winter, each one will be better fed. Ten well-fed does will produce at least as many fawns as 15 half-starved ones. This has been proved beyond question.



(Photo by Allison)

Autopsies of does killed by automobiles and in other accidents is the main source of information on fawn production.

Michigan is no exception to this rule. In the Upper Peninsula the average rate of fawn production is 14 or 15 fawns per year from every 10 breeding does. In the food shortage parts of the northern Lower Peninsula the rate is slightly more than 13 fawns per 10 does. In the worst areas it runs about 10 fawns per 10 does. In the better food areas of the north it is over 16 fawns per 10 does, and in southern Michigan fawn production jumps up to 20 per 10 does.

On the surface these differences may seem insignificant but they are not when applied to the thousands of adult breeding does. An increase of one fawn per ten does for 100,000 does equals 10,000 extra fawns.

Fawn production has been fairly consistent in the Upper Peninsula, but it has been consistently low. In the northern Lower Peninsula trouble areas in 1952 and 1953, following a couple of mild winters and a heavy removal of deer in the first special season, fawn production reached 16 per 10 does. After that it fell off as food conditions again became more critical. However, in the spring of 1958, following a mild winter and a moderate removal of deer in the previous special seasons, fawn production was up again.

New Light On an Old Question

What about fawns born of half-starved does? Low fawn production due to "before birth" factors is only part of the story. Limited experiments on penned deer at the Department's Cusino Experiment Station in the Upper Peninsula show that fawns from underfed does stand a poor chance of living through their first week of life. In light of what is known of human infant deaths in famine areas of the world these losses of infant deer are not surprising.

We do not know all of the intricate "whys" of the biology of deer reproduction but we do know that it is possible to collect more fawn "interest" from a smaller but healthier "capital" breeding stock. It is absolutely necessary that we remember this.

A FAIR BILL OF FARE

A NEWLY-BORN DEER, like other young mammals, lives on milk. Deer milk is pretty rich stuff. It contains about twice as much solid material and more than twice the fat and protein as cow milk. Fawns nurse for a couple minutes every two or three hours. Although they can handle soft browse at the end of two weeks, and hard corn and acorns at a month, they must have milk for about twelve weeks. After that they can get along on their own. A fawn is not dependent on its mother by hunting season, sentimental thinkers to the contrary. It takes only about one month for a doe to "dry up" after nursing stops. A doe that is "dry" in November could have had a fawn or fawns the previous June.

Deer eat the tender shoots and leaves of annual plants, including aquatic vegetation, when they are available, but their mainstay is the twigs, buds, and leaves of shrubs and young trees. Deer are browsers. Fruits and nuts are relished and grasses are taken during the spring green-up time. However, deer are not true grazing animals.

Deer feed mainly in the early morning, late afternoon, and evening. Some deer, like some deer hunters, feed all day long. During deer season or at other times when they are disturbed from their normal routine they will feed most of the night. When food is hard to come by they have to feed longer.

In winter a 100-pound deer requires from 4 to 7 pounds of food per day depending on the food quality. Most deer normally lose weight in winter even if they have plenty to eat. They can sustain an over-winter weight loss of up to 30 percent of their fall weight, if they go into winter in good shape, but that is the limit. If they lose more than 30 percent, they are just about ready for the scavengers.

All Is Not Food That's Green

Northern Michigan looks pretty green on the Fourth of July. Even in deer season there seems to be plenty of bushes for deer to eat, but deer look at it differently. When the deer hunter growls, "What d'ya mean there's no deer food? Look at all the bushes and trees," he is usually looking from

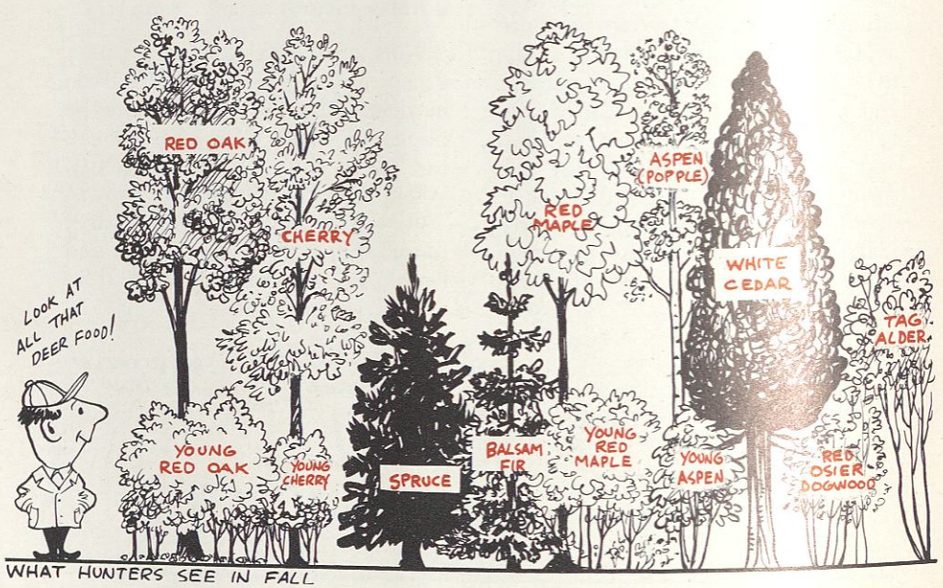
his angle only. Food must be where deer can get at it. It must not be farther above the ground or snow than head high to a reaching fawn, and it must be available when needed most—December to April. Food in the tree tops might as well be on the moon, unless it is brought within reach by wind or heavy wet snow, or by the axe and saw. Food under deep snow does not count either, although deer will paw through 12 to 16 inches of soft snow to get at acorns. Where winter weather is severe, food must be near the sheltered areas in which deer seek protection from the elements.

Deer will thrive on some browse and starve on others. Furthermore, what is good for one member of the deer family may not be good for another member. A moose thrives on balsam yet takes white cedar only as a last resort. With deer it's the complete opposite. We don't know for sure why this is. Our knowledge of deer digestion is one of the blank spots in the picture. The action of the all-important digestive bacteria and the other "inhabitants" of the stomach is being studied but they hide their secrets well.

The chemical composition of various wild foods has been analyzed and there are differences but we do not know yet why some foods will sustain deer while others will not; we just know that it works this way.

There are three classes of deer food—preferred, good, and stuffing. The preferred foods are those that sustain deer better than all others. Ground hemlock, white cedar, red osier dogwood, and red maple are good examples of this class.

Some second choice or good foods are hard maple, aspen, jack



WHAT HUNTERS SEE IN FALL

pine, and white birch. These will not sustain deer as well as the preferred species.

The "stuffing" or "starvation" species—balsam, red oak, cherry, spruce, tag alder, and tamarack—will not keep deer going unless they get some of the better foods too. A deer will starve with a full belly of pure balsam or spruce. In fact most starved deer have a full belly—of the wrong food.

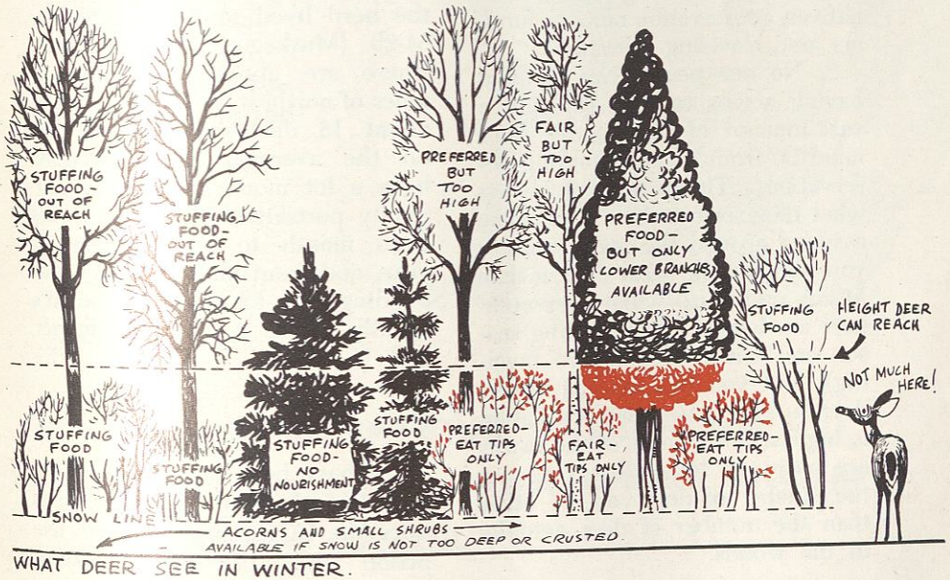
Acorns make good supplemental food when they are available. A diet of starvation foods, plus one-half pound of acorns per day will pull deer through a 90-day yarding period, but we don't have even a fair acorn crop every year.

Unfortunately deer take the preferred species first and even though some browsing pressure is removed by killing more deer, the remaining deer still work on the preferred foods. To date the species showing signs of recovery after local winter herd reduction have been the second and third classes.

Continued heavy browsing of preferred foods in many areas is gradually eliminating some of them from the forest. Ground hemlock is practically gone and in many areas cedar has almost reached a point where it can no longer be considered as a part of the deer food picture. The cedar seedling that ventures above the snow level is promptly decapitated. Lumbering brings the tops down to deer but this food supply is gone for good almost as soon as it is cut.

Home-Grown Foods

Deer also like most kinds of farm crops. A liking that often gets them into trouble. Corn, alfalfa, strawberries, beans, celery, cherries—just about all truck crops are eaten at times.


STUFFING FOOD - OUT OF REACH
STUFFING FOOD - OUT OF REACH
PREFERRED BUT TOO HIGH
FAIR BUT TOO HIGH
PREFERRED FOOD - BUT ONLY LOWER BRANCHES AVAILABLE
STUFFING FOOD
HEIGHT DEER CAN REACH
NOT MUCH HERE!
STUFFING FOOD
STUFFING FOOD
STUFFING FOOD - NO NOURISHMENT
STUFFING FOOD
PREFERRED - EAT TIPS ONLY
FAIR - EAT TIPS ONLY
PREFERRED - EAT TIPS ONLY
SNOW LINE
ACORNS AND SMALL SHRUBS AVAILABLE IF SNOW IS NOT TOO DEEP OR CRUSTED
WHAT DEER SEE IN WINTER.

HOW MANY DEER IN MICHIGAN?

THAT'S A FAIR question, but its hard to put out an answer that will be accepted by everybody. Your estimate will depend on your point of view. The hunter who sees only a couple of deer during a day's hunt has a different idea than the strawberry grower who has to chase 50 deer out of his patch at night.

There is no practical **single** method yet devised that will give a good count of deer on both large and small areas. But by combining **all** available information we can arrive at a good figure.

During the past 20 years of research, two important facts stand out clearly.

1. There are almost always more deer than most people think and these "most people" include deer hunters, game biologists, old-time natives, conservation officers, farmers, and traveling salesmen.

2. No one person can, without having access to and applying a vast amount of data, judge herd numbers from his own hunting observations. Things are not always what they seem to be. If you take a swing around the north country you will see the **most** deer in late March and April when deer numbers are **lowest** (after hunting season and winter and before fawning). But you will see the fewest deer in July when the population is **highest** (after most of the fawns are born). A lot of things govern the number of deer you see other than the number of deer actually in the woods.

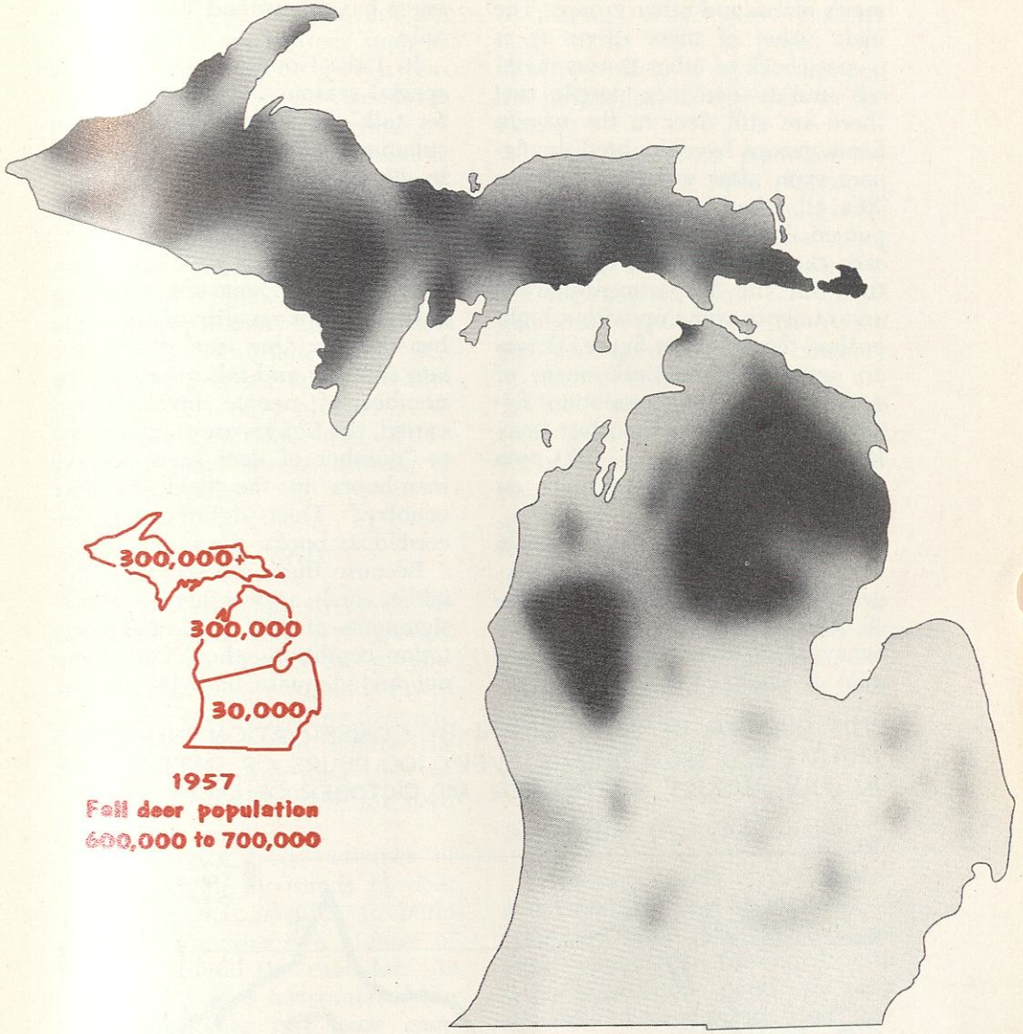
Recent work in the Cusino Experiment Station enclosure in the Upper Peninsula will raise the eyebrows of some hunters. Seven hunters, hunting the mile-square area for research purposes, saw an average of one deer per hour. There were 34 deer inside the fence. A lot of hunters seeing twice that number of deer per hour during deer season would never believe that there were 34 deer on **any** square mile in the State.

Numbers

Before the 1957 hunting season, there probably were between 600,000 and 700,000 deer scattered from the Copper Country to the Lake Erie marshes. About half of them were above the Straits and half below. Less than $\frac{1}{20}$ of the herd lived south of Highway M-20 (Muskegon to Bay City). There are about 35,000 square miles of northern deer range, hence about 18 deer per square mile **on the average.** Some sections have a lot more, some less. The family portrait of the herd varies from month to month, year to year, and from place to place depending on a lot of things, but it's usually about $\frac{1}{2}$ does, $\frac{1}{3}$ fawns, and $\frac{1}{6}$ bucks.

Census Drives

We have been driving deer and counting them in certain areas since the CCC days. Now we use prison labor, boy scouts, sports-



DEER CONCENTRATIONS IN MICHIGAN –
They're in every county but northern Michigan is THE deer country.

men's clubs, and other groups. The main value of these drives is as a spot check of other census methods and to convince people that there are still deer in the woods. Some groups have doubted the figures even after watching a drive. "It's all faked." One such group put on their own deer drive in an area they thought had fewer deer than on the Department-marked areas only to come up with a higher-than-they-thought figure. Drives are not yet a practical means of getting statewide population figures because of the time-cost item. It takes a minimum of 100 men to drive and count the deer on 1 square mile.

Some recent Upper Peninsula drives have been in the flabbergasting category. October, '56—49 deer from ½ square mile near Seney; — 39 deer from ½ square mile in Delta County. The average has run around 30 per square mile.

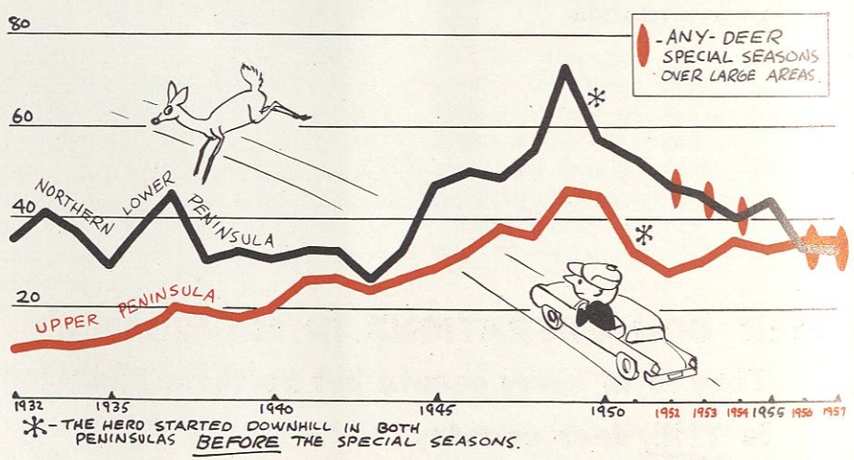
In Lake County—scene of many special seasons and much "slaughter talk" in the early '50's—recent summer drives have yielded 20 to 40 deer per square mile.

Sight Records

Since 1932, Department personnel have kept records of the number of deer they see during the late summer and fall. Because the number of people involved has varied, the figures are standardized to **"number of deer seen per 100 man-hours in the field, in deer country."** Deer sightings are recorded as bucks, does, and fawns.

Because there are so many variables, such as weather, work assignments of field men, and vegetation conditions, these figures are not an adequate base for getting

THE NUMBER OF DEER SEEN BY CONSERVATION DEPARTMENT FIELD MEN DURING EVERY 100 HOURS OF PATROLLING IN JULY, AUGUST, SEPTEMBER, AND OCTOBER OF EVERY YEAR.



*-THE HERD STARTED DOWNHILL IN BOTH PENINSULAS BEFORE THE SPECIAL SEASONS.

absolute numbers of deer, nor are they good for small areas such as a county but they do give a reasonable picture of the **trends** in deer numbers for large areas.

They are much more reliable than an individual hunter's impression because they involve close to 100,000 man-hours of observation each year. The interesting point made by this data is that the decline in deer numbers in the northern Lower Peninsula came BEFORE the first big special season in 1952. The drop also came to the Upper Peninsula long before the inadequate special seasons of 1956 and 1957.

Working Backwards

It is now possible to break the deer kill down into age groups. This gives an idea of the proportion of bucks, does, and fawns shot every year. Knowing the composition of the herd before the season we can, after analyzing the kill, compute what the fall herd had to be.

By amassing large volumes of data based on thousands of deer each year it is possible to build a more comprehensive picture of the herd 'round the calendar. As additional data is accumulated the picture becomes still more complete.

Deer Activity Index

This is a $10.00 expression designed to keep narrow-minded people from laughing at a perfectly good system of figuring out how many deer there are. A deer makes an average of 13 piles of droppings daily. This is pretty constant regardless of age or diet and the pellets last a long time in the woods.

If you can get a count of the number of pellet piles (deposited from leaf-fall to spring) on a **large** number of **randomly selected** check areas, and if you deduct for the hunting season take, the illegal kill, and over-winter losses you can get a good idea of the number of deer present in the spring.

This system has been used with some success in other states and we use it as one source of our deer population figures. In effect, we are doing what hunters do—look for deer sign.

It is possible to check the figures from the wild against known deer populations on large fenced-in experimental areas. The field work involves a lot of time and no little amount of refining and planning. It's a lot of work, and the data must be carefully applied.

Squeezing Out the Answer

If enough figures are at hand — and volume is one of the keys to reliability — and if all the data on deer numbers is combined with deer production data, we can squeeze out some pretty good population dope. There is reasonable assurance that in some areas, there are less than 10 deer per section. In others, there are 10 to 20, or 20 to 30, or 30 or more. We also know that for every 100 deer in the woods in October, we can safely make venison out of 20 to 25 of them.

THE TAKE-HOME PAY

THE ANNUAL dividends from the deer herd is both intangible and material. Deer are worth a lot just to have around—for the kids to pop their eyes at on an after-supper ride. It's hard to place a value on this—like trying to figure out how much seeing a pretty sunset is worth.

The material dividend is what the red-coats drag out of the woods every fall. Kill figures are often questioned because the man with the raised eyebrows does not understand how they are obtained. Basically, kill figures come from the deer hunters.

Hunters' Reports

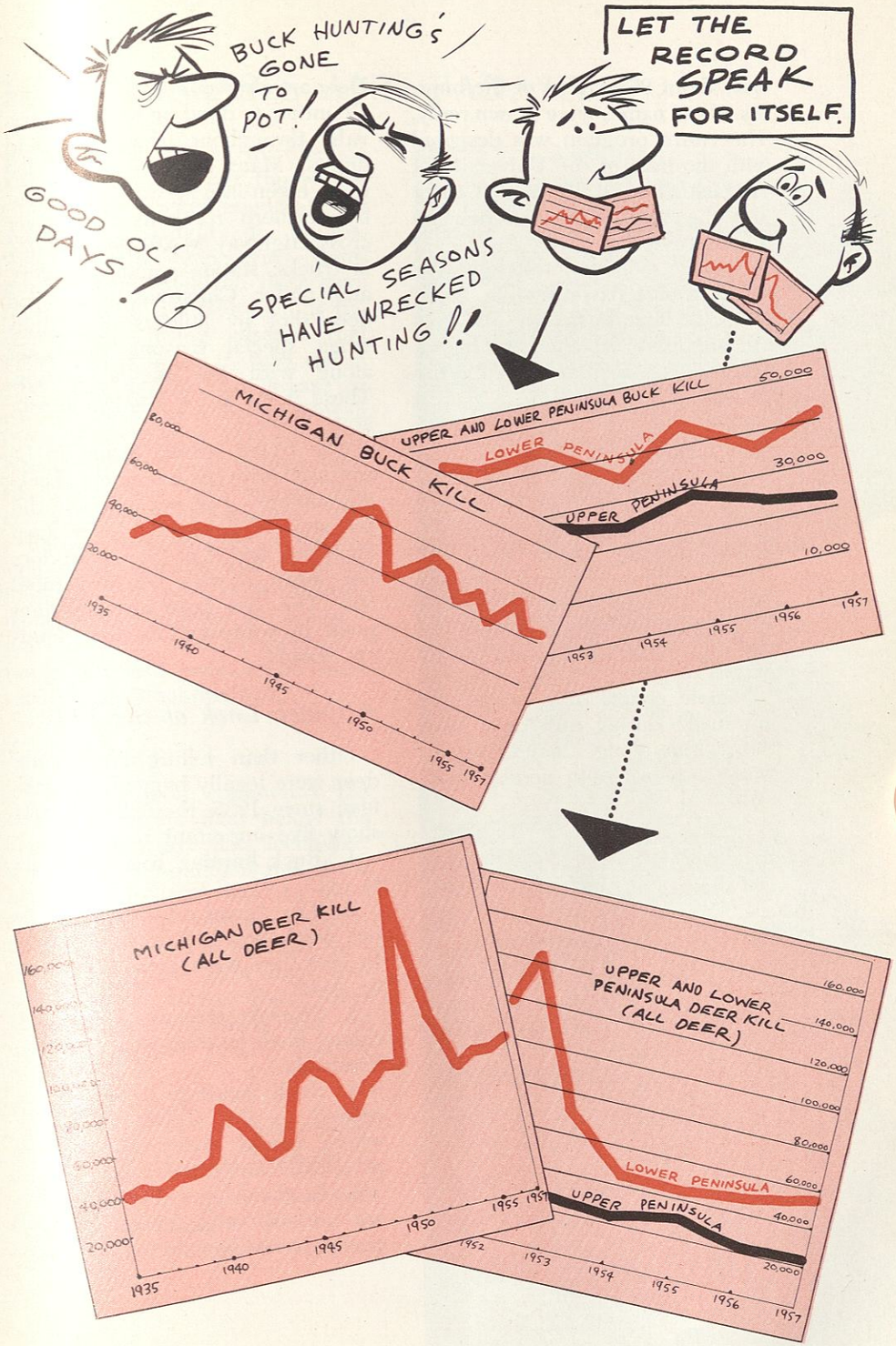
In 1937, the Legislature required that all deer license buyers report their good or bad luck via the mail. That first year, 65 percent of them reported. By 1951, the number complying dropped below 20 percent. A 20 percent return would be an adequate base on which to compute the kill—indeed a 2½ percent sample is big enough if it is an unbiased sample. But as early as 1944 some research work showed that the sample of hunters reporting was badly biased. The successful hunters were more inclined to report than the ones who "got skunked." This inflated the kill figures and the degree of inflation increased as the percentage of hunters reporting dropped.

Where the Kill Figures Come From

Starting in 1952, kill figures are computed from a random sample of deer hunters via post card questionnaires and also from an actual count of deer coming south on and in cars. Both systems are based on sampling and right there the doubters start to raise their eyebrows. They do not believe that you can contact every 20th or 40th hunter or count deer on cars for 15 minutes or ½ hour out of every hour and come up with an accurate total figure. These same folks accept sampling in everyday life, yet draw the line at sampling deer. The government food inspector doesn't open every can or jar; he takes a sample. The engineer **samples** rock strata before the foundations are poured. The legislator does not contact all his constituents for an opinion—he takes a sample. The doctor or nurse takes a **sample** of your blood for a blood test. We are sure that no one would insist on a **complete** blood sampling the next time he had a physical exam.

The Mail Survey

Every 40th deer license buyer (every 20th in 1957) is contacted via mail after the deer season to determine his deer hunting success, where and when he hunted, and other pertinent dope. If he does not reply he is sent reminder cards until he does answer. In the


BUCK HUNTING'S GONE TO POT!
GOOD OL' DAYS!
SPECIAL SEASONS HAVE WRECKED HUNTING!!
LET THE RECORD SPEAK FOR ITSELF.
MICHIGAN BUCK KILL
UPPER AND LOWER PENINSULA BUCK KILL
LOWER PENINSULA
UPPER PENINSULA
MICHIGAN DEER KILL (ALL DEER)
UPPER AND LOWER PENINSULA DEER KILL (ALL DEER)
LOWER PENINSULA
UPPER PENINSULA

end, about 95 percent of the hunters whose names were drawn reply. The entire program was designed with the help of the University of Michigan Survey Research Center and the statisticians at Michigan State University.

To date, accuracy tests give the survey a high passing grade. Doubling the sample size in 1957 was an attempt to obtain even higher accuracy for small areas within the peninsulas.

The Traffic Survey

Newspapers, radio and TV stations, and deer hunters have come to expect a quick summary of the season results almost before the last deer killed is cold. Since 1952, the Department's traffic survey has produced quick and relatively accurate results.

Sample counts of deer on cars are made during and right after the season along about 30 highways running south across M-20.

(Photo by Harrington)

Deer are also counted at the Straits. Counting is done at regular intervals throughout the days and nights. Many different items have to be taken into account; deer shot by northern residents that never cross Highway M-20; deer carried in trucks, station wagons, trailers, and under Christmas trees; and deer shot by holders of permits when special seasons run right along with the regular season. These items are evaluated in separate surveys.

The traffic survey is not to be confused with the biological checking stations. Just because you did not stop to have your deer aged (or if you had it in the trunk) does not mean it was not accounted for. This has been an important point of confusion in some hunters' minds.

A Quick Look at the Kill

Other than telling how many deer were legally bagged in Michigan since 1935, these four charts show five important facts.

1. Buck hunting has not "gone to pot."
2. The "good old days" were not much better than now-a-days. In fact they were more often not so good.
3. Special seasons have not ruined buck hunting in the Lower Peninsula.
4. Buck hunting has not improved in the Upper Peninsula where special seasons have been practically non-existent.
5. In the Upper Peninsula we are undershooting bucks and we are badly undershooting all deer.

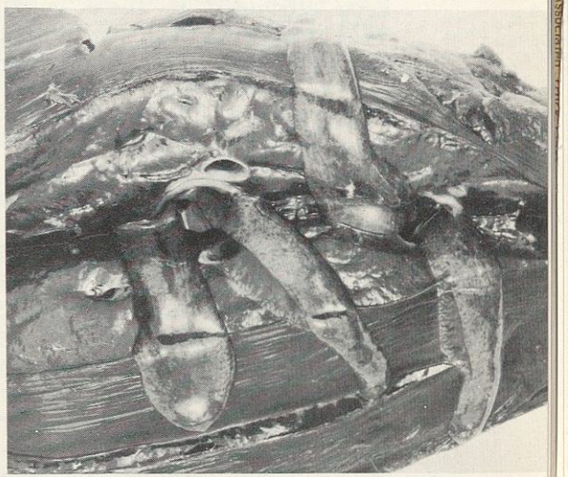
DEER DISEASES AND PARASITES

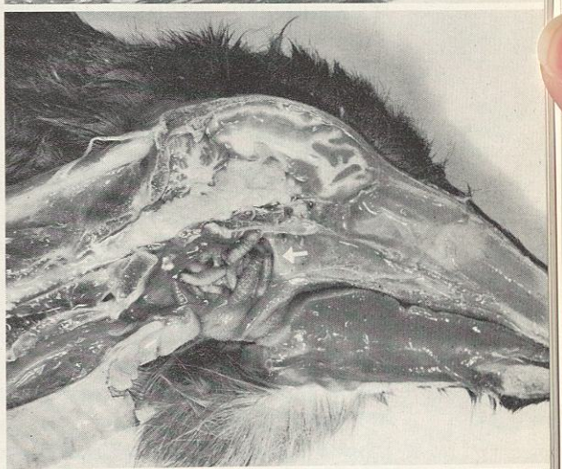
DEER are subject to diseases and parasites but the whitetail has been rugged enough to resist the onslaught of viruses, "bugs," "worms," and germs. From time to time Michigan deer have been hit with troubles such as the hemorrhage-causing disease that killed some animals in 1953 and in 1955. But to date, no disease or parasite has made a serious dent in the deer population, nor have large numbers of deer been rendered unfit for hunter use — unless you count starvation as a disease.

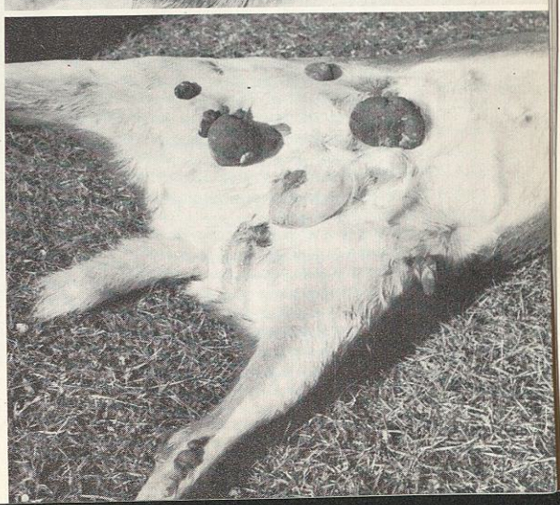
Rather than include a discussion of all diseases and parasites found in deer—even their scientific names would frighten the printer—we thought it best to mention a few of the more common and easily recognized "abnormalities."

Liver Flukes

These are more common in the Upper Peninsula than below the Straits. They are flat, leech-like, unsavory looking inhabitants of the liver. Apparently, they do more damage to the hunter's appetite than they do to the infected deer even though the liver may contain a lot of them. Every deer isn't infested but flukes are not uncommon. Deer usually recover







Top — Liver flukes.

(Photo by Hulbert)

Center — Deer head cut lengthwise to show nose bots.

(Photo by Hulbert)

Bottom — Skin tumors.

(Photo by Jenkins)

from heavy infestations, although the death of a few young deer has been attributed to these flukes. They stay in the liver and do not affect the meat. Just turn off your imagination and enjoy those steaks.

Nose Fly Grubs

Another evil-appearing character is the bot-fly larva. These grubs hole up in nasal passages and at the back of the throat. We run into them mostly during the spring when they are large and easily seen. Apparently they look worse than they are because deer survive heavy infestations. Healthy deer can harbor them with few ill effects, although harm may be done in a few cases.

Skin "Tumors"

These are guaranteed to make most hunters sorry they shot the deer. They are wart-like growths that appear on the body of the deer. In extreme cases death may occur as a result of the actual mechanical interference with seeing, walking, breathing, or eating. They are only skin deep and do not affect the meat or organs. A few turn up every season.

"Worms"

Tape worms, round worms, lung worms, and whip worms have been found in whitetails but they rarely are much of a threat to the deer herd. Many of these are also parasites of domestic stock that have caught up with the deer. Hunters rarely notice these "hitchhikers" in deer.

Poisons

Wild cherry leaves will form hydrocyanic acid when normal growth is retarded under certain conditions. Eating affected leaves has been suspected of killing some deer, but definite proof is lacking.

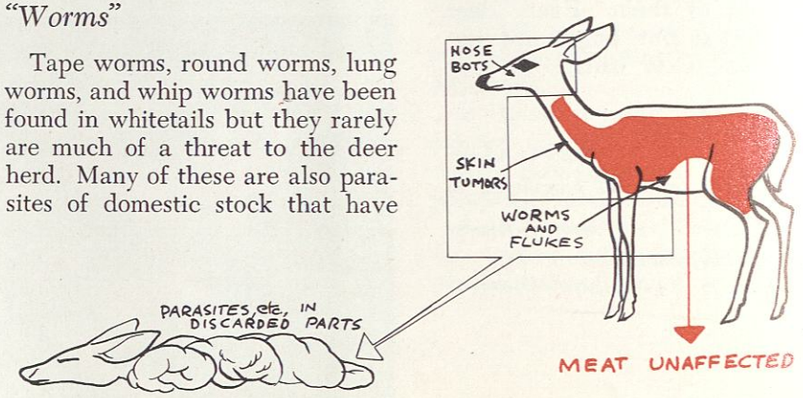
Blindness

Every year at least a few cases of blind deer are reported and undoubtedly many others go unnoticed or at least not reported. Autopsies have revealed that at least in some cases, the blindness was caused by a load of birdshot in the face. What manner of man is guilty?

Pneumonia

This is commonly diagnosed in deer weakened by malnutrition or by a massive infestation of lung worms or other parasites.

Examination of dead deer in the spring in overbrowsed areas often reveals evidence of pneumonia. However, the disease is seldom found in well-fed animals.



STARVATION

EVERY YEAR some deer will die, even during mild winters or where there is a reasonable amount of food. There are always some weaklings, but mass starvation is a needless waste.

The slow process of starving to death is pathetic to watch. Eighty to ninety percent of starvation losses are fawns born the preceding spring and summer. They stagger around, floundering in the snow until they cannot get up, even when you walk up to them. Finally they don't live through a cold night and you find them curled up on the lee side of a tree or hummock, dead. Once loss of weight progresses beyond a certain point, no amount of food will pull a deer through.

The process of starvation has been studied in detail. First the fat over the rump and the saddle disappears. Shortly afterward the deer begins to lose that slick early fall appearance. As the fat under the skin is lost, the skin hangs loosely. Fatty tissue around the heart and in the abdomen around the lower organs is used up and the animal has now developed a typical fuzzy-faced look. The final stage is an almost complete loss of fat from the normally creamy-pink bone marrow. An autopsy of the large leg bone now will expose red jelly-like marrow with the fat completely gone – proof of starvation.

Starvation losses can be considerable and they never fail to attract attention. They are the spectacular symptom of the "disease." Indirect, but more important, losses like lowered fawn production and poor fawn survival are less obvious. In local areas, starvation and its complications can cut the fawn crop in half.

Sportsmen's clubs and other groups seem to be impressed by spring trips into the yarding areas to see starved deer. After a rough winter, starved deer are easily found in food shortage areas. Finding half a dozen dead fawns within a stone's throw is not uncommon.

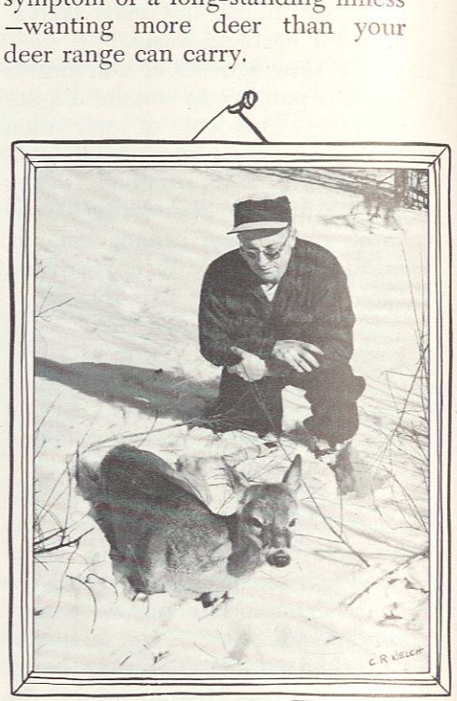
In the winter and spring of 1950-51 an estimated 50,000 deer starved. About 45,000 of these were fawns. In the 1952 special season about 45,000 fawns became venison and this caused a lot of scare talk.

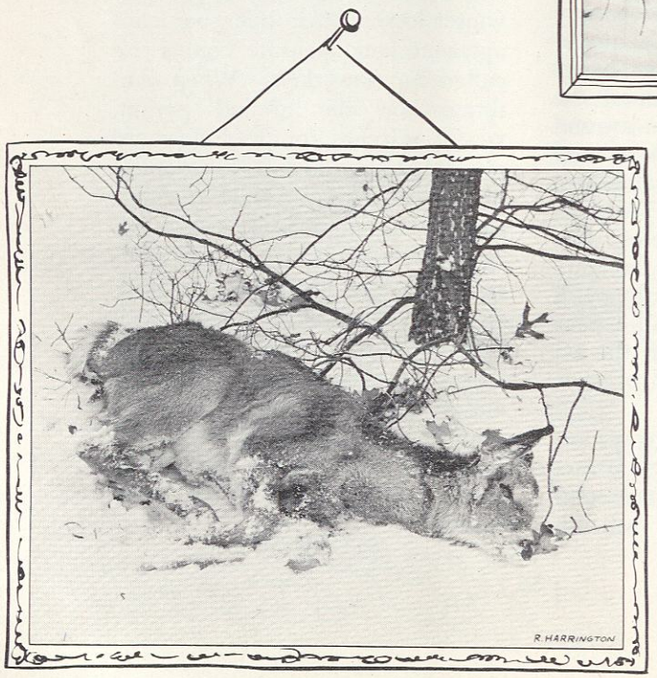
It is ironic that waste by starvation causes so little excitement, yet a proper harvesting of the crop by hunting causes headlines.

It is not enough to **estimate** overwinter losses. More intensive management and accurate counts are called for nowadays. When conditions on the ground permit, spring searches for dead deer are made covering 35,000 square miles of deer country. Actually, a representative sample is taken by small crews of men on hundreds of half-sections. The losses for the entire state can then be computed with fair accuracy. Each dead deer found is autopsied by a biologist and the cause of death is determined. The bone marrow test separates the starved deer from those that have died from other causes.

The 1956 spring survey revealed about 41,600 dead deer in the northern Lower Peninsula of which about 16,600 had starved. In the Upper Peninsula an astounding 74,000 were dead, including 19,400 definitely starved. It wasn't a particularly hard winter either. The remaining 54,600 deer were victims of trigger-happy hunters, predators, accidents, or unknown causes.

Starvation is more than a senseless waste. It is also a dramatic symptom of a long-standing illness —wanting more deer than your deer range can carry.





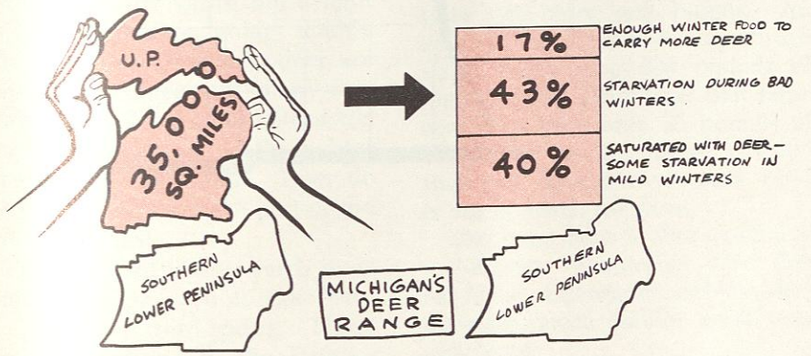
DEER RANGE

IT IS A FACT, often overlooked, that the number of deer in the woods depends mostly on the amount of deer food in the woods; not on the whim of the Conservation Department, or on the wishes of the deer hunter, or on the feelings of the resort owner who wants lots of deer for his guests to see. Deer do not make their own food; it has to grow. If there is winter food for 100 deer in your favorite swamp and 100 deer are there after the hunting season, about 100 will be left in spring. A few will get hung up in trees or die in other ways, but these losses are usually slight. If we have 150 deer left after the hunting season and there is food for only 100, no brand of magic, or sentiment, or wishful thinking will bring more than 100 through alive and this surviving 100 will be in rough shape. Actually you probably will end up with much less than 100 because that extra 50 will eat up so much food before they starve that the whole food level is reduced even further.

Michigan Deer Country

The deer food shortage problem is confined to the northern ⅔ of the State. There are about 35,000 square miles north of Highway M-20 and above the Straits and just about all of this is deer country. Farms make up about 1/20 of the Upper Peninsula and over ⅓ of the northern Lower Peninsula but enough wild land is mixed with the farms so that deer are everywhere. The adaptable whitetail often ranges up and down the main streets of northern towns and cities. Deer have even been in suburban Detroit tulip beds and a doe went on a spree in a ladies' dress shop on the edge of Lansing.

About 40 percent of these 35,000 sections are so saturated with deer that some starvation occurs even in a mild winter. On another 43 percent, food shortage takes its toll only during severe winters. On only 17 percent of the range is there enough food to carry more deer than we have there now. It



is the winter food that is in the shortest supply, but in places even summer range conditions are slowly going down-hill.

Deep snow and severe winter weather forces deer to "yard" or congregate in sheltered areas. Formerly, these yarding areas were mostly swamps where cedar, spruce, and balsam were either predominant or were mixed with hardwoods. Now, because many of the swamps no longer produce much food, the deer are forced to range farther and farther. In effect, the winter range is getting bigger, but not better.

The length of time that deer are confined to the wintering areas depends on how long the deep snow stays in the woods. Some winters may be mild and the deer will not be yarded up for more than a week or two at the most. On the other hand, the yarding period may last 3 to 4 months. Crusted snow conditions may permit deer to move farther from the yards, but a light snow crust makes going doubly hard for deer. Normally deer are yarded up longer and more regularly in the deep snow belt of the North than they are in the lighter snow belt farther south. Deer do not yard in the southern part of the Lower Peninsula.

These limited winter yards must contain enough food to take care of all the deer until spring. Those that are removed in the hunting season do not use any valuable winter food.

Forest Types

Not all of the wild land looks alike nor is it alike in its ability to grow deer food. There are pine lands; conifer swamps; northern hardwoods like maple, beech, and basswood; oak country; the aspen and birch uplands; and the brush and open land.

The difference in quality of food may not be apparent, but the differences in quantity can be measured either by confining deer on fenced plots or by actually cutting and measuring the browse. An acre of good cedar swamp will provide 400 deer-days of food before it's completely browsed out. That is, it will feed 400 deer for 1 day or 1 deer 400 days. A hardwood ridge may have only 150 deer-days of food per acre.

Not only is there a difference between types, but the food available from one type changes as the trees get older and bigger. An acre of hardwood in the brush stage might give 200 pounds of food. Twenty years later that same acre may have only 35 pounds of deer food on it. Keep in mind that any browse over **your** head is out of reach for deer.

The point here is that each area is different. Researchers have dug out these differences and the deer manager must handle each area differently.

THE PROBLEM OF "CHANGE"

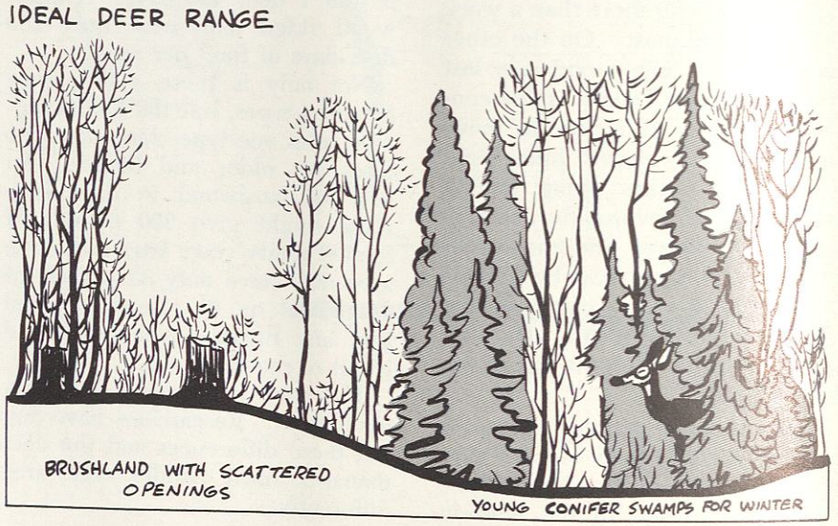
TREES AND BUSHES grow and openings in the forest close in. An abandoned plowed field will grow into weeds and grass, then to a few scattered bushes and trees, and finally to forest land. This process is called succession. On some land the change is rapid. Elsewhere it is slower, but the end result in this part of the country is almost always complete forest cover. When the trees get big there is little deer food.

Old forests shade the ground and prevent young growth. Old forests are like a city park as far as deer food goes.

Ideal deer country is brushland with scattered openings and some young cedar swamps for winter shelter and food. If the pattern would stay that way, there would be fewer problems. But there are two main forces at work all the time changing the land from the ideal deer stage to something less than the best:

Trees Grow

This is the easiest of the two forces to recognize. Although jack pine isn't the best deer food, it does provide a good example of what tree growth does to deer range. After a forest fire, if conditions are right, jack pine will seed itself and come up as thick as hair on a dog. In just a few years it will be head high. The deer like to hide in it then and they really **can** hide in it. In 15 to 20 years the trees have grown taller. Shading will have caused the lower branches to start to drop off. In 30 years the stand will look park-like.



There will be little on the ground except pine needles and perhaps some blueberries and sweet fern.

This same process happens to all forests left to themselves. A fast-growing aspen stand gets away from deer in less than 15 years. Slower-growing cedar may take 30 years or more. Different trees have different rates of growth. Soil fertility and moisture also make a difference. About 80 percent of all the deer country has already grown out of the best food stage.

Deer Eat

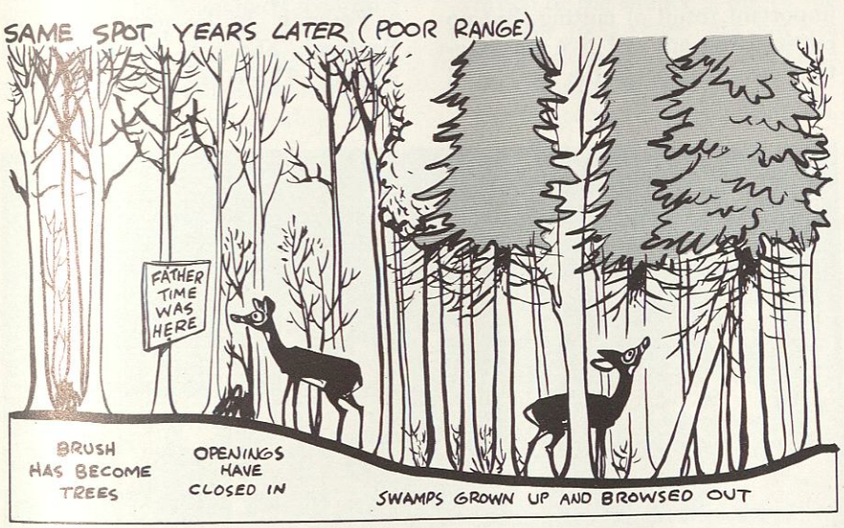
Trees and bushes, like deer, are always trying to reproduce themselves. Seedlings come into places where there is enough light, moisture, and space. Some trees send up sprouts or root suckers when something happens to the parent tree. Deer feed on this young growth and if heavy browsing continues long enough the young growth is killed and a park-like forest develops. There are plenty of places in Michigan where there are no seedlings or sprouts of the best deer food species **less than 20 years old.**

The "deer line" in swamps and on scattered trees and shrubs plainly marks the stand-up height of hungry deer. It has become so common in the North that too many people don't even think of it in connection with the deer problem.

Practically we cannot halt tree growth on large areas and thereby hold the forest at the best food level, and the species that deer prefer are the hardest to hold on to.

But we can slow down this overall change. We can interrupt it by cutting in different places every year so that there is always some young forest conditions.

This is the goal of deer range management.


SAME SPOT YEARS LATER (POOR RANGE)
FATHER TIME WAS HERE
BRUSH HAS BECOME TREES
OPENINGS HAVE CLOSED IN
SWAMPS GROWN UP AND BROWSED OUT

THE AXE AND SAW

THE LUMBERJACK gave us our big deer herd in the first place and the most practical means at present of improving deer range on a big enough area to amount to much is to keep cutting timber.

Timber cutting provides deer food in two ways:

1. Tops and branches become immediate deer food. Hungry deer soon learn that the whap of an axe and the buzz of a chain saw means food and they'll be waiting for the tree to hit the ground. It's quite a sight. An acre of hardwood tops may provide ¼ ton of browse. Cutting an acre of cedar swamp can put over one ton of browse on the ground and thus feed five extra deer through the winter.

2. Cutting big trees provides light and space needed by new seedlings and sprouts. This continuous food production is the most important result of cutting. **But no cutting program will give any long-time benefits unless the deer herd can be held down to a point where it will not eat up the new growth as fast as it comes out of the ground.**

Once big timber is cut, the land is improved for deer for only a relatively few years. The length of the following "good food" period depends on the kinds of trees and their growth rate. Perhaps within 10 to 15 years after cutting, the forest will be going downhill again as a producer of deer food.

So Why Not Do More Cutting?

If all the land was public land, if all labor was for free, if nothing else mattered except deer, the outlook would be rosier. We really could manage the deer range.

Only about ⅓ of the Upper Peninsula is public land—either State or Federal. In the northern Lower Peninsula about ¼ of the land is public. There are about 2-½ million acres of deer winter range. The State owns less than ⅓ of this and the Conservation Department cannot tell the private landowner how much and what to cut. A large percentage of the timber land that is ready for cutting is privately owned.

(Photo by Ray Voss)

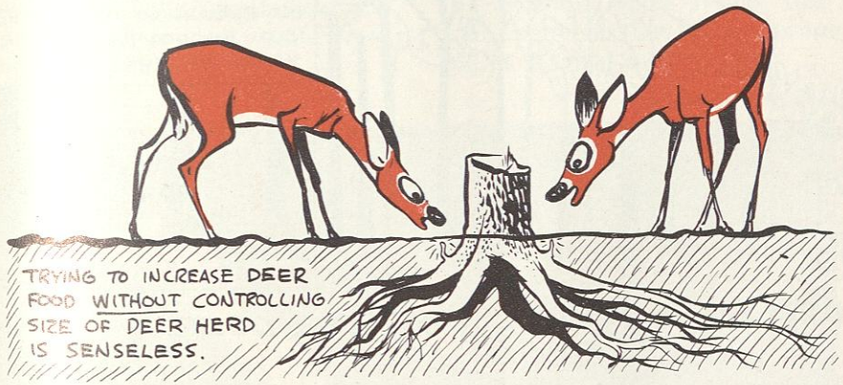
When cutting public timber, the State must consider certain obligations. It's important to have deer around, but timber production is also necessary. Some land produces better timber than deer. Other areas have always been poor timber country, but good deer range. Each area must be managed according to its own best capabilities.

The State cannot make cuttings for deer management alone. The costs would be intolerably high. The products must be marketed. Cuttings just to feed deer can be handled on small areas only in an emergency.

Market conditions for wood products govern the whole business. The only way state-owned timber can be cut economically is for private operators to buy it on the stump and then cut it. When there is a poor market, not much gets cut. The state cannot cut prices just to get timber cut for deer range management without competing unfairly with private forest owners.

Much of the timber is out of the best deer food stage, but not yet big enough to cut profitably. Time works against the deer.

In spite of the various limitations,

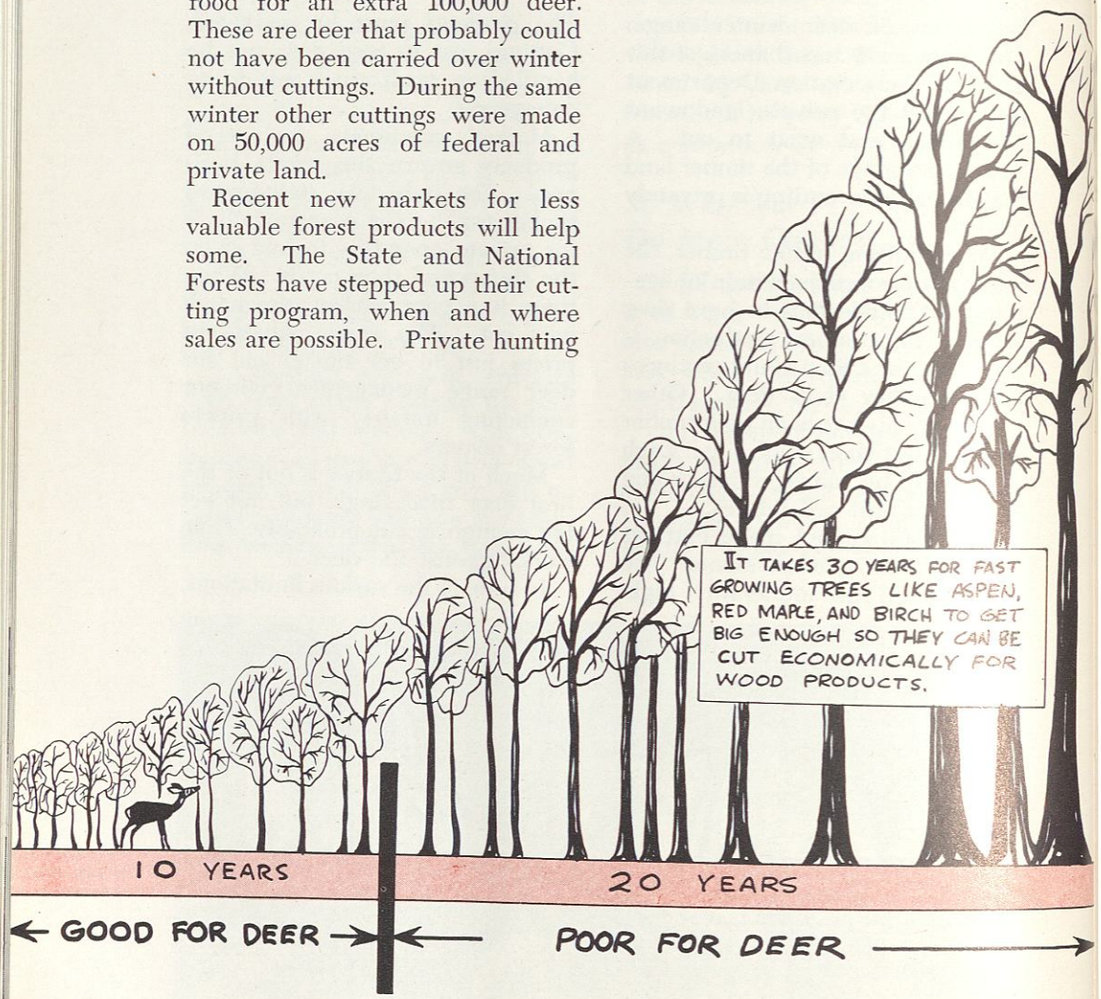


winter cutting on state land within 1 mile of deer yards has more than doubled since special seasons were authorized in 1952.

The benefits of the deer-yard cuttings on state land alone are considerable. In the winter of 1956-57, 1,164 cutting permits were issued covering over 58,000 acres. The tops and new growth provided food for an extra 100,000 deer. These are deer that probably could not have been carried over winter without cuttings. During the same winter other cuttings were made on 50,000 acres of federal and private land.

Recent new markets for less valuable forest products will help some. The State and National Forests have stepped up their cutting program, when and where sales are possible. Private hunting clubs have been working with pulp companies to get their timber cut.

Cutting allows the deer manager to carry extra deer over winter. But if we try to carry too many deer over winter, the new growth will be eaten before it produces much food. Trying to improve the range without controlling the size of the deer herd is senseless.


IT TAKES 30 YEARS FOR FAST GROWING TREES LIKE ASPEN, RED MAPLE, AND BIRCH TO GET BIG ENOUGH SO THEY CAN BE CUT ECONOMICALLY FOR WOOD PRODUCTS.
10 YEARS
20 YEARS
← GOOD FOR DEER →
POOR FOR DEER →

FIRE AND CHEMICALS

THE AXE and saw are nearly ideal tools for deer range management in timbered areas. But there are thousands of acres of wildland where there is little timber worth cutting and where other tools must be used.

Fire

In the early days, wild fire temporarily destroyed much deer range, but controlled fire can be used to prevent brushy areas from changing into forests and to keep openings open. Theoretically, and actually, this works. Nevertheless, there are bugs in the ointment.

There are limitations. Controlled burns for this purpose should be hot. This means they have to be set off when weather conditions are also ripe for wildfires to start. The men and equipment necessary to keep a controlled burn from getting out of control may be needed just at that time to fight wildfires. Therefore, the number of controlled burns that can be carried out successfully is limited by the available men and equipment and by the few days when weather conditions are suitable.

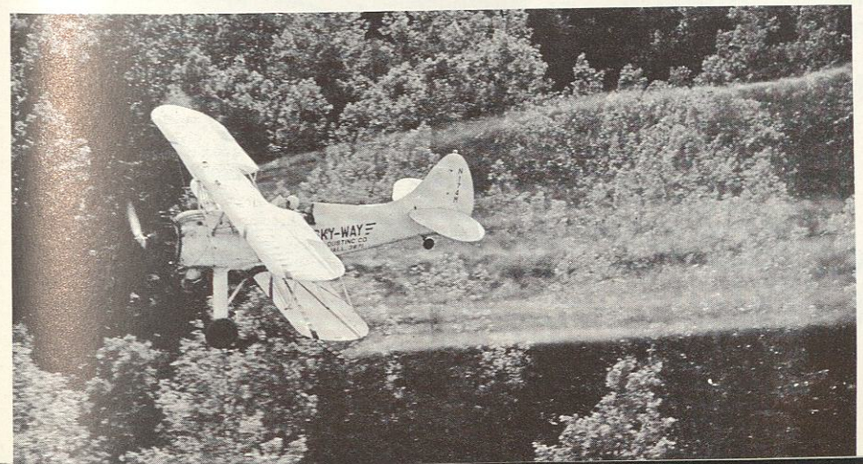
From 1945 through 1957, 58 areas covering about 20,000 acres have been burned. This is only ½ of one percent of the 4,000,000 acres of state-owned land.

Chemicals

Brush killers, such as 2,4-D and 2,4,5-T can be used to kill trees or to cause trees and shrubs to sprout. They can be sprayed either from the ground or from the air. From 1952 through 1957, 30 areas covering 2,000 acres were sprayed experimentally to produce deer browse. This was done where there was no merchantable timber and where poor aspen stands had gotten too big to produce deer food.

Some spray jobs successfully produced dense sprouting. Others were not successful. If it would work all the time, herbicide spraying would be relatively cheap and effective but it does not work all the time. Earlier season spraying —as soon as the leaves are full size —is showing better results than later treatments, but herbicides are still in the field testing stage.

(Photo by Harrington)



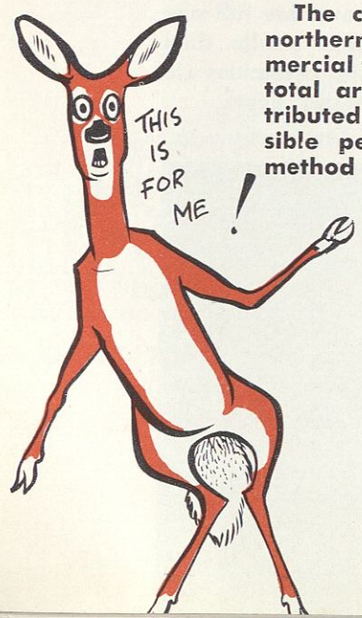
PLANTATIONS AND FOOD PATCHES

"IF FOOD PLANTS won't come in naturally, why not plant them?" We did. About 6,000,000 trees and shrubs – 47 different species – have been planted but few have survived. Northern Michigan is not the easiest place to get good seedling survival even without deer around. Add the nibbling, chewing deer and rabbits and 10 percent survival is good. Some pines and spruce survived, but only because deer don't like them.

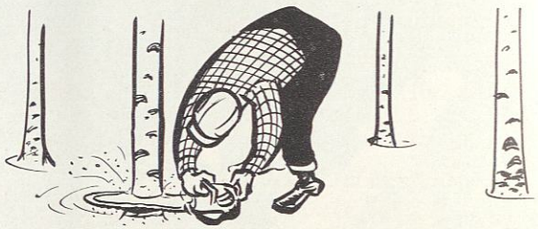
We often see deer feeding on rye patches—particularly in early Spring. Why not plant rye for deer? We did. In the early '30's, and again in 1950 in a large-scale test. We studied the patches carefully. Deer grazed them heavily in the fall and spring. They could not use them in winter when food was needed most. The rye was buried under the snow and contrary to some beliefs, it does not grow under the snow. In the spring of 1951 just as many starved deer were found near the rye patches as elsewhere.

Over 40 other kinds of agricultural crops such as corn, barley, wheat, buckwheat, oats, sorghum, and vetch have been tried, but they do not grow well in the North. They especially don't grow well down next to the swamps. Some sportsmen have disputed that fact, especially regarding corn, but it can be demonstrated easily by counting the number of cornfields in the northern Lower Peninsula and above the Straits. There are precious few. Even if it wasn't so cold in the North, there is little wild land suitable for growing farm crops.

Just because a new deer food plant to bolster up natural foods has not been found, doesn't mean that research along these lines has stopped. A sensible range management program includes continued research into new methods. You never can tell what will work.



The conclusion reached to date throughout the northern whitetail range is that a continuous commercial timber cutting program, covering the largest total area that the market will permit, well distributed in small blocks, and with the shortest possible period beween cuts, is the most practical method of making more deer food.



EASY SOLUTIONS THAT DON'T WORK

The Breadline

DEER CAN BE FED in pens and in the "back yards" of hunting clubs and resorts. If you can keep a nice bunch of deer around all winter that way—"Then why can't the Conservation Department feed the hungry deer in Michigan?"

Winter feeding seems like the easy out. It has been the most commonly offered bit of advice since deer got hungry. We wish it could be done. It would certainly be a popular action program. It would look good. The Department would be commended by a lot of folks—until they realized that it wasn't working.

The cost of a full scale deer feeding program is staggering even in these days of astronomical figures.

Deer cannot get along on just anything. They will thrive only on good quality clover, alfalfa, or concentrate, and not even on that when it gets wet and soggy.

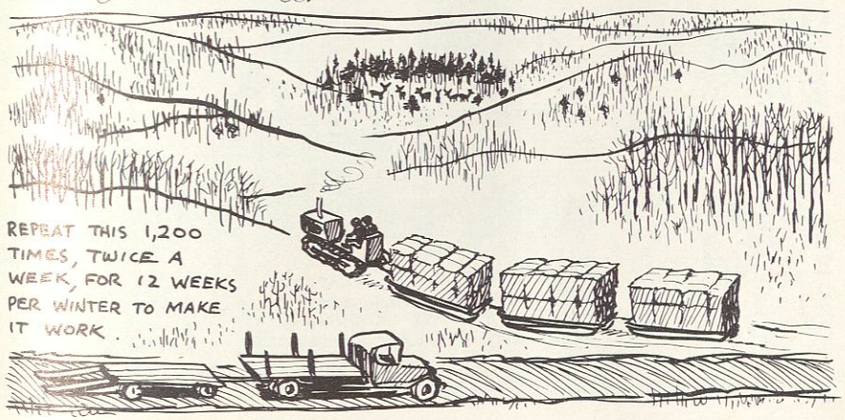
There are 300,000 hungry deer most winters.

Each deer must be fed at least 5 pounds of hay per day to allow for spoilage and waste. Deep winter lasts 70 to 90 days.

In 1958, baled alfalfa-brome grass hay cost about $30.00 a ton. Pure alfalfá, which is better for deer, costs more. **Hay costs alone would come to a couple of million dollars.** To get that hay into the swamps **in winter** would really cost —for tractors, sleds, trucks, and men. "Flying Boxcars" and even helicopters don't put it where it has to be.

In 1953, it would have cost about $22,000 to feed deer on 150 square miles of easy-to-reach range in Oscoda and Crawford counties. But a state-wide feeding program would involve over 100 times that much country. In the Upper Peninsula it's even more difficult to get off the main roads in winter and costs would be higher than down below.

Once you start to feed there is



no turning back or stopping. The deer concentrate near the feed-line and they continue to eat up natural browse as well as the artificial food. If you cut off their hay before spring, they're left high and dry. That has happened in places and the results have been sad.

You have to feed in such a way that the fawns, who need food most, get it. Even a loving doe will keep her own fawn away from food when she is hungry.

Now suppose it would work and we saved an extra 50,000 deer. They also have fawns in time and next year the breadline is bigger. Where do we stop?

But it has been tried on a large scale in other states from New York to California. Wisconsin has tried it to the tune of $632,000. It has not worked. Reaching enough deer at the right time was physically impossible. Deer still starved. The range kept going downhill and there were **no more** deer for hunters. Treatment of the **symptoms** will not cure the disease.

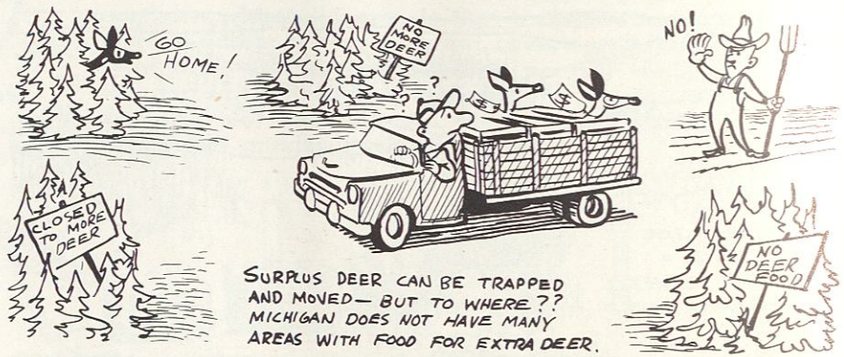
Deer Trapping

Trapping deer is fun—for a while. The Game Division has been trapping deer experimentally for many years. Deer are trapped, tagged, released, and retrapped to learn their survival, how far they range, and their physical condition. But why not trap them in large numbers in over-browsed areas and move them to places that can handle more deer?

The first problem is that 85 percent of the country is saturated with deer and only 15 percent could handle more.

Secondly, in the deep snow areas it costs, conservatively, about $25.00 to handle each deer.

Thirdly, it's next to impossible for trappers to keep ahead of deer. The New York Conservation Department tried to reduce the deer herd on the 16-square mile Seneca Ordnance Depot in New York and after 2 years, even with the help of the U. S. Army there were more deer than before the trappers went to work.

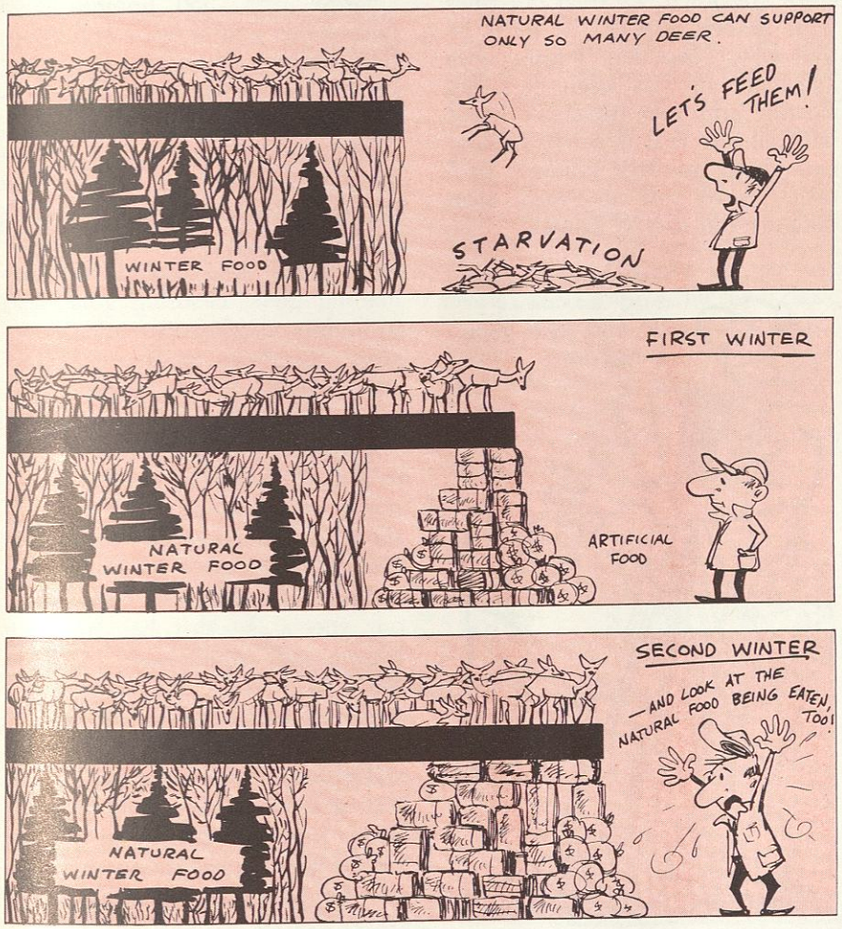

GO HOME!
CLOSED TO MORE DEER
NO MORE DEER
NO!
NO DEER FOOD
SURPLUS DEER CAN BE TRAPPED AND MOVED— BUT TO WHERE?? MICHIGAN DOES NOT HAVE MANY AREAS WITH FOOD FOR EXTRA DEER.

Back to Mother Nature

"Let Nature handle it" is a common and sincere suggestion—"No sportsman wants to shoot a doe or fawn." But is that sportsman willing to argue that a slow lingering death by starvation is better than a hunter's bullet or arrow?

No doubt Nature is an expert handler except that it's a shame to see a couple of million pounds of spoiled venison lying in the spring thaw. Nature does not always favor man and his wishes. Flu "bugs," boll weevils, and bacteria are all part of Nature's plan, but penicillin, DDT, and soap come in handy.

If there were an easy solution to the deer problem, conservation departments from Nova Scotia to California would be happier, but there isn't.



BUCKS, BULLETS, AND BONEHEADS

THERE ARE some boneheads in the woods shooting bullets at deer, porcupines, beer cans, power line insulators, cows, elk, automobiles, other hunters, and themselves.

There are not **many** boneheads. Most deer hunters are pretty careful citizens. We all get that glassy-eyed stare in the fall, but when the chips are down, we treat our rifles with proper respect. It must be that way. Our deer hunting gun accident rate has been dropping steadily and your insurance agent will tell you that if you're healthy enough to go deer hunting, he'd rather have you up North than dodging the cars at home.

Gun accidents have always been a big part of the deer management picture. The buck law was finally passed in Michigan in 1921 after much complaining. The sportsman would not "buy" it as a means to increase deer. It was finally "sold" as a safety measure. "If you have to see horns, you won't shoot at a man."

Since 1921, 350 hunters have been killed and at least four times that many wounded—hunting bucks. The reason is simple. Shooting other hunters by mistake for deer is only a minor cause of gun accidents. The big causes are tripping, dropping guns, carrying loaded guns in cars, stepping into the line of fire, loading and unloading guns, cleaning guns, and just plain carelessness and horseplay. Contrary to many beliefs, stray bullets also are only a minor cause of accidents.

Opponents of any-deer seasons or antlerless seasons have felt that when any deer is legal, hunters shoot at sounds or at "hair," and it's too dangerous to be in the woods. But the accident rate in our special seasons has been no higher, and often lower, than in the buck seasons. In other states with any-deer or antlerless seasons the story is the same.

There are a lot of unknowns in the gun accident problem, but many years of investigation and record keeping has shed some light on the Michigan situation. The National Rifle Association has compiled data on a continent-wide scale.

Hunter concentration apparently does not mean danger. You stand just as much chance of getting your name in the paper whether hunting in Ontonagon County (5 hunters per square mile) or in Roscommon County (35 hunters per square mile). There are fewer accidents in the Upper Peninsula, but then there are fewer hunters. The rates are about the same.

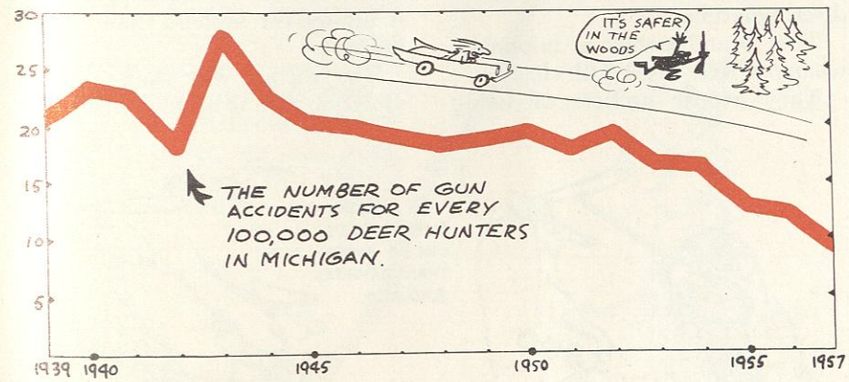
It is no more dangerous to hunt at dusk, or dawn, or in the fog, or in the brush than when and where visibility is unlimited. By far the most accidents occur in bright light and where you can get a good open shot. It is not necessary to have daily opening and closing hours for safety's sake. They are necessary only to prevent night hunting and poaching.

High-velocity rifles are no more dangerous than shotguns with slugs. They'll shoot farther in the clear, but that is unimportant since 85 percent of all shootings occur well within the **lethal** range of a 12 gauge rifled slug. About ⅔ of all accidents happen within the **deadly** range of supposedly safe buckshot and ½ of the shootings are at a range of **10 yards** or less. It isn't the gun or caliber, it's the "nut" that holds the stock.

We consider both fatal and non-fatal accidents equally serious in analyzing them. It's only pure chance that directs a bullet into the victim's head or shoulder.

Unless we understand what causes accidents and what **does not** affect the accident rate, we may find ourselves burdened down with laws and regulations that seem like the easy solution, but that actually don't help at all.

There are a few true accidents. Naturally. Turn close to ½ million humans loose with guns and two or three true accidents a year are bound to happen. The same thing would happen if that many people played around with baseball bats. But most gun "accidents" are needless tragedies caused by a mixture of carelessness and a generous dash of stupidity.



THE STRING AND STICK FRATERNITY

THERE IS A good reason for the mushrooming popularity of archery. October in Michigan is hard to beat; perfect weather for camping and hunting. In almost every county all deer are legal and they're all fat. There aren't so many hunters in the woods—not yet anyway, and at mid day when the deer are not moving around you can walk up a "pat" or two. Take your fish pole along, too.

The first archery licenses were sold in 1937 to 184 residents and 2 nonresidents. They killed a total of four deer. By 1956, there were over 42,000 archers and they killed about 2,400 deer. Every year, approximately 1 archer out of 16 gets a deer. About ¼ of the kill are adult bucks, ½ are does, and ¼ are fawns.

In every section of this booklet there has been at least a hint of controversy and difference of opinion. This is no exception. Some dyed-in-the-wool gun hunters feel that archers, with their early season and liberal regulations, are the favored few. They charge discrimination.

They brand arrows as inhumane weapons that don't kill cleanly.

They accuse archers of being slicker-than-average violators.

They also accuse archers of stirring up the deer and making them wild for gun hunters.

On the other hand, archers accuse bird hunters and their dogs of ruining their sport—"I was just about to let fly at a deer and some /!b°/!!b&!°)':?! setter came galloping along and away went the deer!"

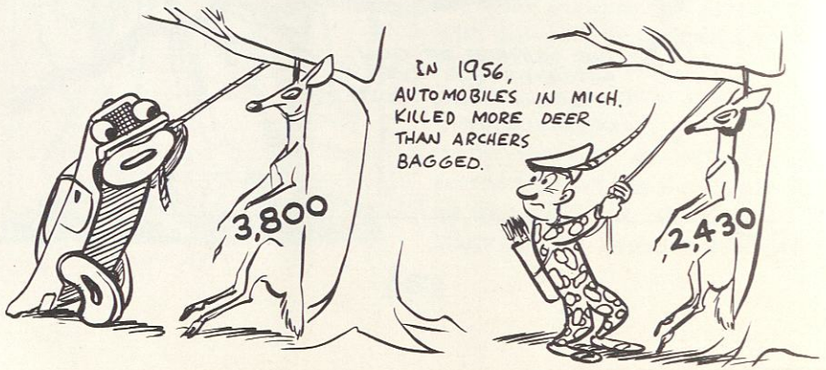
A few archers blame special gun seasons for their bad luck.

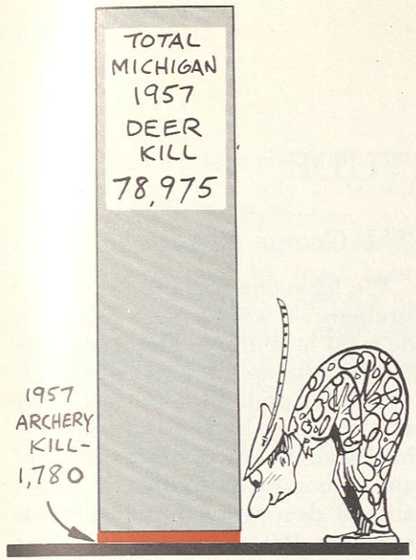
Oh, for the wisdom of Solomon!

There is no discrimination. Anyone who is authorized to buy a gun license can buy an archery license and join the fraternity. It will cost him less to buy an archery rig than a good rifle, too. A good many archers are ex-gun hunters. Some like both seasons.

Modern bows and arrows would be the envy of Robin Hood. A modern broadhead is a deadly, clean-killing missile that kills by bleeding. Some arrow-hit deer drop in their tracks, but most travel a ways. Most archers are persistent trackers and there is no evidence to show that crippling loss is higher for archers than for gun hunters.

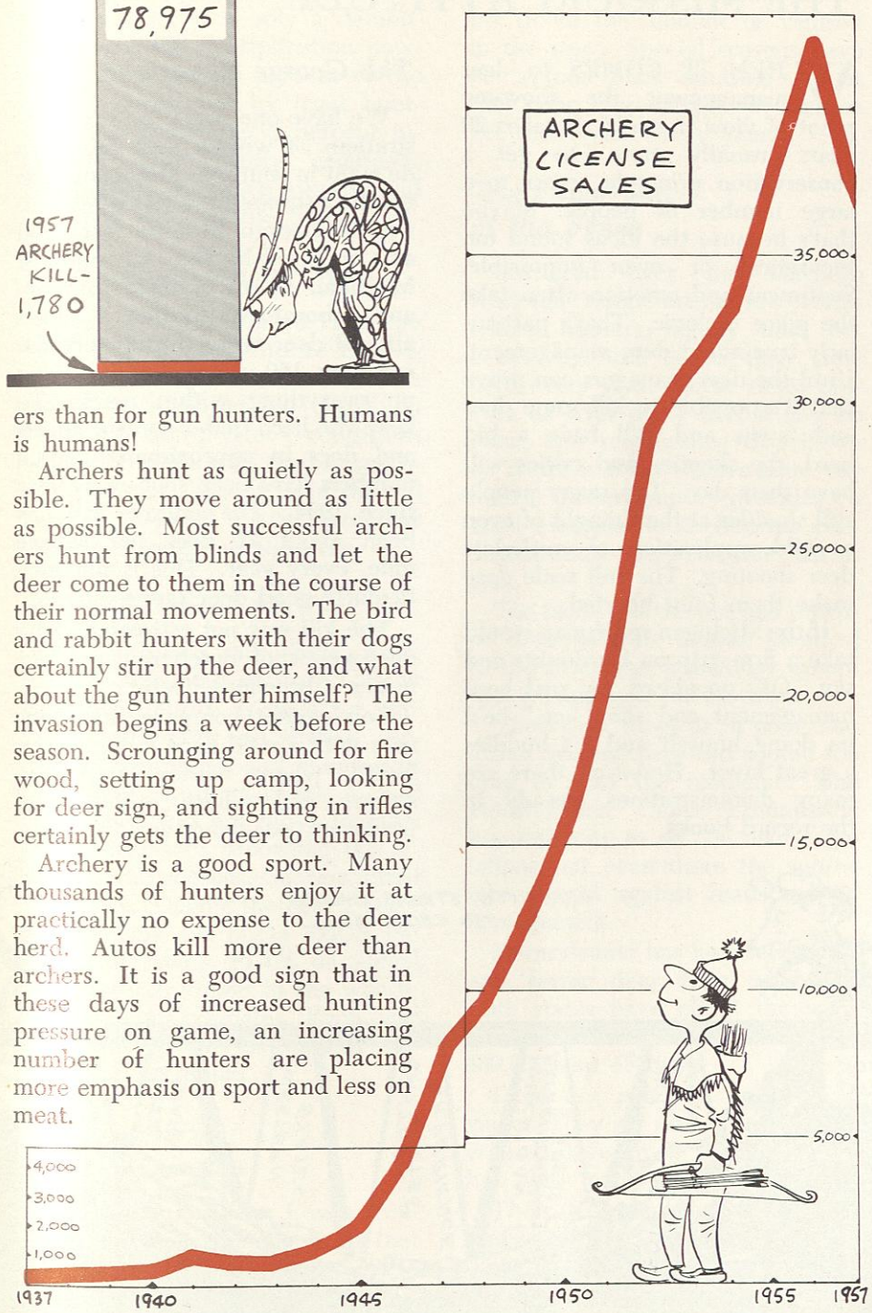
The record will show that the violation rate is no higher for archers than for gun hunters. Humans is humans!





Archers hunt as quietly as possible. They move around as little as possible. Most successful archers hunt from blinds and let the deer come to them in the course of their normal movements. The bird and rabbit hunters with their dogs certainly stir up the deer, and what about the gun hunter himself? The invasion begins a week before the season. Scrounging around for fire wood, setting up camp, looking for deer sign, and sighting in rifles certainly gets the deer to thinking.

Archery is a good sport. Many thousands of hunters enjoy it at practically no expense to the deer herd. Autos kill more deer than archers. It is a good sign that in these days of increased hunting pressure on game, an increasing number of hunters are placing more emphasis on sport and less on meat.



THE MISSOURI ATTITUDE

WHEN IT COMES to deer management the show-me point of view prevails. It takes 20 years – usually more – to get a conservation principle across to a large number of people. Maybe that's because the ideas sound too theoretical or even impossible. Sentiment and emotion often take the place of logic. That's particularly true about deer management. Until the deer managers can prove that it's possible to kill some does and fawns and still have a big herd, the skeptics and critics will have their day. Too many people still shudder at the thought of even a **mild** application of antlerless deer shooting. The full scale dose make them faint hearted.

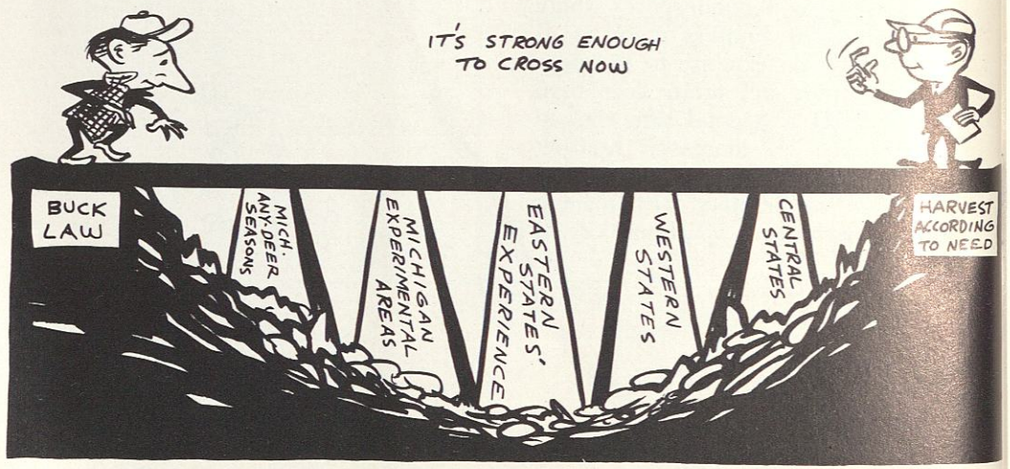
If the Michigan sportsman would take a firm grip on his doubts and say, "OK, go ahead, try real herd management and show me," he'd be doing himself and his buddies a great favor. However, there are many demonstrations **already** in the record books.

The George Reserve

We have one of the best demonstrations of what a deer herd can do right in southern Michigan. The nearly 2-square-mile fenced-in Edwin S. George Reserve is owned and operated by the University of Michigan as an outdoor museum and laboratory. Within 5 years after 6 deer were introduced, the resulting 160 animals were eating up everything within reach. To keep the herd under control, **bucks and does in approximately equal numbers** have been shot every year since 1934. The average kill has been about **20 deer per square mile, every year.** This is not particularly good deer range either.

The kill was not **estimated.** The deer were shot, butchered, and sold under a breeder's license.

You cannot compare these figures with a wild herd living in the North, where winters are more severe, and where automobiles, predators, poaching, and in-season illegal shooting take their toll. The George Reserve is only a demonstration of the multiplication powers of deer and 95 percent of the annual removal is by legal hunting. The remaining 5 percent includes miscellaneous accidents, losses from unknown causes, and poaching through the fence.



The Cusino "Square Mile"

West of Shingleton on Highway M-28, the Cusino Wildlife Experiment Station keeps track of a fenced-in experimental herd on about 700 acres. Here, conditions are closer to the wild than in southern Michigan. About ⅓ of the fall herd is removed **every December** without wiping out the deer.

The Rifle River Area

The 6-square mile Rifle River Area, 5 miles east of Rose City in Ogemaw County, is used for various experiments and studies. Access is controlled and hunting is permitted. Hunters check in and check their kill out when leaving. In the 5 seasons **preceding** the recent special seasons, hunters killed 158 bucks. During the next 5 years hunters took 194 bucks PLUS 195 does and fawns, **PLUS** 83 illegal deer, actually found in the woods. These are not estimates. Each deer killed was actually handled by Department personnel.

The Northern Lower Peninsula

The entire northern Lower Peninsula demonstrates the point that killing some does and fawns, where there is a surplus of them, doesn't cut down the amount of venison in the stew. Special seasons have not ruined buck hunting. About the same percentage of hunters get their buck every year.

The Other Side of the Fence

Scattered over the northern whitetail range are a few states where hunters legally take between ¼ and ⅓ of their deer herd every year. These states provide us with proof that it can be done, and reassurance that if we do it we will not exterminate our herd. Pennsylvania provides a good example for us because conditions there are a lot like Michigan.

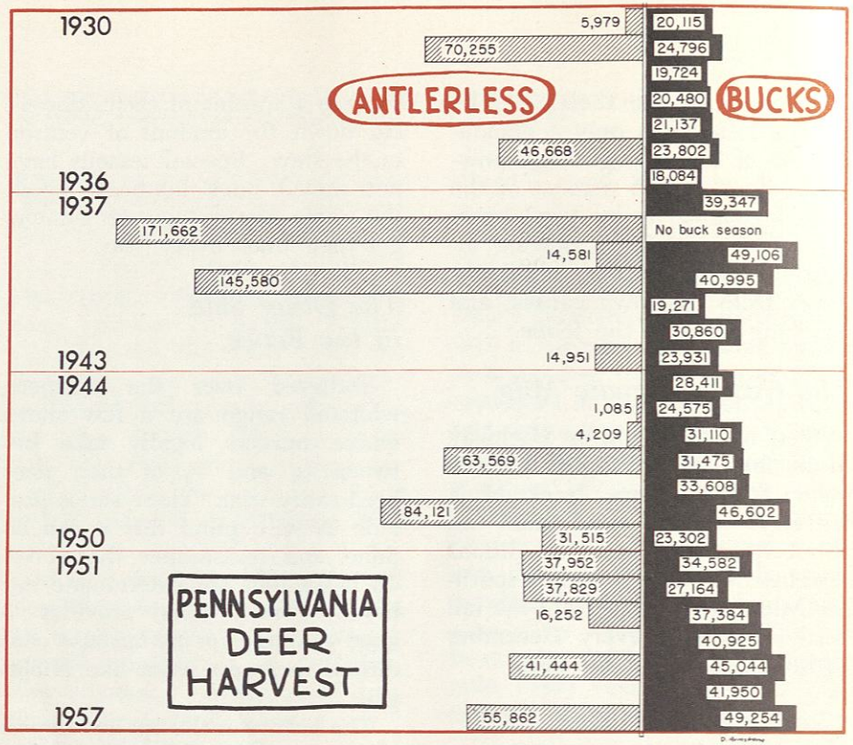
The history of the ups and downs of their herd is almost identical to the Michigan deer story except that it happened earlier there.

Their deer range is in poor condition because they too waited too long to take the medicine. The Pennsylvania Game Commission has authority to set the deer regulations but even there the sportsmen fought against realistic herd management.

Pennsylvania has less deer range and fewer deer than Michigan. Both states have about the same number of deer hunters—between 400,000 and 450,000.

Deer are poached in Pennsylvania. They are also killed to keep crop damage down, and they raise hob with cars.

Their deer country is easy to get into in spite of the ridge-type landscape.



The Pennsylvania whitetail and the Michigan whitetail are the same deer. And when deer season comes, you can't tell a Detroit hunter from a Philadelphian nor an Upper Peninsula pulp cutter from a Scranton coal miner.

Pennsylvania has had all kinds and combinations of deer seasons. But lately, theirs has been a general buck season (3-inch spikes and larger) followed by 1 to 3 days of antlerless seasons. A special permit is required for antlerless hunting. Permits are sold with county quotas. In 1957, **335,000** permits were sold. In 1958, **350,700** were authorized for sale. That's about three permits for every four deer hunters.

Between 1930 and 1957, Pennsylvania hunters killed 847,000 bucks and 843,000 antlerless deer. In the 1930's their yearly buck kill was about 20,000. Now it's more than double that.

Their 1940 and 1949 seasons were of particular interest. In 1940, 186,600 deer of both sexes were killed – the largest single season kill on record in any state to date. This was only two years after a kill of 172,000 antlerless deer. In the 1949 1-day antlerless season, 84,100 does and fawns were taken out of the woods—140 per minute.

If Michigan hunters had been harvesting their bucks, does, and fawns in the same proportion as Pennsylvania hunters, they would have taken home over 1⅓ million **extra** deer during that same period. But they didn't.

UTOPIA AND HOW TO GET THERE

UTOPIA MEANS different things to different people. The tropical island paradise idea has been popular for a long time. "Two cars in every garage and a chicken in the pot" sounded like a worthwhile goal. The deer hunter's Utopia is enough deer in the woods to keep his blood circulating and one on the car to bring home to the kids.

With close to ½ million "redcoats" in Michigan, it's going to be easier to give every hunter two cars and a chicken than one deer. But we can come a lot closer to Utopia than we think. It all depends on these three:

The Deer

The Department of Conservation

You

The Deer

We can count on the deer to reproduce to the limit of their physical condition. We will hear no complaints from them.

The Department of Conservation

No one has a greater interest in the deer herd than the agency that has been given the job of managing it for the good of everyone. The deer manager does not want to exterminate the deer even though some people think so and say so. He draws his pay from deer license money. He, above all, wants to see as many deer and deer hunters as possible.

Revenue from deer licenses is

one of the biggest single sources of funds on which many important and popular conservation programs depend.

Aside from the cold financial viewpoint there are other equally important considerations. Integrity, professional ethics, and a sincere desire to maintain a valuable natural resource for the future, are all good reasons why deer management recommendations will always be based on sound biology and common sense.

The researchers will continue to ferret out new facts about the deer and their range. They will learn that some old ideas were way off base and that some obvious answers have been overlooked.

The game managers will keep right on applying both time-proven and new methods of increasing deer food in the forests.

The Department will always try to apply measures to the limit of its authority that will do good for deer today—and tomorrow.

These measures will not always be the same from year to year. In some areas, at some times the buck season will take enough deer. Under different conditions or at different times some does and fawns will have to be removed. The size of the surplus will change. It almost always will be bigger than most people think. Experience has taught that lesson well.

You

Experience has also proved that when it comes to deer management the sportsman is his own worst enemy. His over-protective attitude toward deer has resulted in a sickening waste of well over a million fine animals.

We have at least 600,000 whitetails in Michigan every fall and if we hunt bucks only, we'll kill 10 or 12 percent of them. We know we can take 25 percent of the herd without cutting into the breeding stock. It's already being done on small areas and in entire states and then some. In Michigan that would be a yearly kill of 150,000. That's even allowing for losing some deer to coyotes, cars, and hungry humans out of season.

Deer hunters are directly to blame for an even more shameful waste of meat and sport—shooting does and fawns in buck seasons and "leaving 'em lay" in the woods. Some cases are true accidents. The shooter was convinced he saw horns, but too many cases are "shoot first and look for horns afterward."

The illegal-inseason kill of deer has been with us ever since deer of any size, age, or sex was made illegal game. It is considerable. It cannot be stopped by one conservation officer for every half county or one officer to the square mile even if he never slept and had radar "eyes" in the back of his head. It can only be stopped by the hunter himself.

Since the CCC days, the U. S. Forest Service and the Department of Conservation have made surveys covering thousands of acres of deer country and as early as 1934, searches on the Huron National Forest, in the northeastern Lower Peninsula, showed just as many illegal deer left in the woods as there were bucks taken home.

Back in the days when we had less than 150,000 deer hunters—and when the legal buck kill was less than half of the present harvest, searches were made by CCC labor. They showed an illegal kill of over 17,000 deer. What is it today with over 400,000 hunters in the woods?

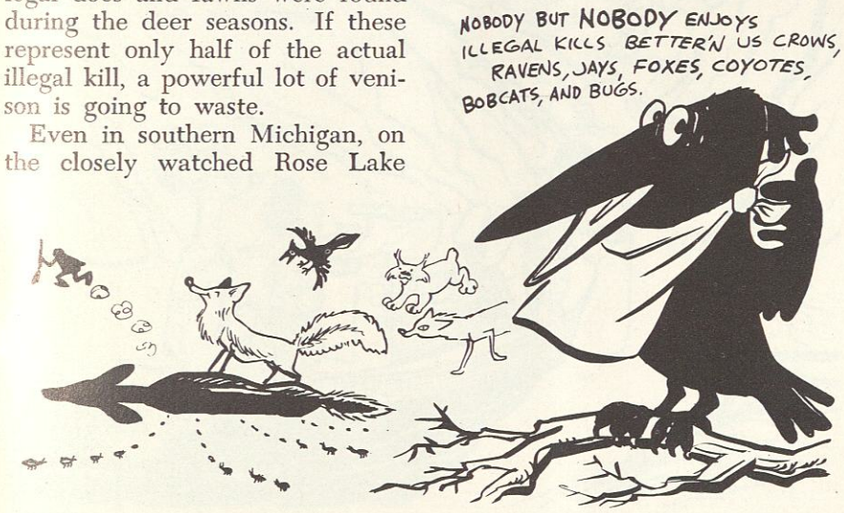
On the Rifle River Study Area in Ogemaw County, under a permit hunting system from 1945 to 1957, 505 antlered bucks were killed and 143 illegal deer were reported and found. But tracking foxes from deer carcass to deer carcass on the Rifle River Area and on the Gladwin Refuge (which is open to deer hunting) after the 1956 and 1957 deer seasons showed that only about one half of the illegal deer were reported. Foxes are efficient carcass finders.

On the Gladwin Refuge, 90 bucks were taken from 1954 through 1957. In addition, 64 illegal does and fawns were found during the deer seasons. If these represent only half of the actual illegal kill, a powerful lot of venison is going to waste.

Even in southern Michigan, on the closely watched Rose Lake Wildlife Experiment Station near Lansing, the illegal kill is eye-opening. From 1949 through 1957, 13 legal bucks were recorded but 12 illegal does and fawns were found in the woods and fields.

The Upper Peninsula Dead Deer Survey, in the spring of 1956, at least partially answered the question, "What happens to all the deer?" Careful autopsy work on every dead deer found in the woods separated those that died in the fall and early winter from those that starved in the late winter and spring.

Of the total over-winter loss of 74,000 deer; 19,400 had starved to death; 900 were victims of dogs, predators, or accidents; 24,400 had died of unknown causes; 7,300 had been shot; and 22,000 were placed in the "cause of death unknown" column, but the time of their death could definitely be put at "fall or early winter." Convincing but cir-



cumstantial evidence suggests that most of those "died in fall or early winter" deer were shot. Some were unrecovered legal bucks but most were does and fawns.

These are just a few examples of the data that is available from Michigan. They are not the most dramatic nor are they the most conservative.

To summarize this unsavory situation: in some areas the illegal waste is "slight"—perhaps only one quarter of the legal kill. In other areas it exceeds the legal harvest. If we could take these deer legally, we could easily add another 15,000 to 60,000 to the total legal kill. They should be added. They're dead. They were taken by hunters. They could just as well be cut up and put in freezers—legally.

In neighboring Wisconsin, a detailed field survey was made in a large part of one county. In 1956, hunters took 1,714 legal bucks and left over 3,000 illegal does and fawns to waste in the woods.

While we're adding to the possible kill, what about the farmland deer in southern Michigan? There are 20,000 to 30,000 of them and we take only about 2,500 per year. They have fawns so fast we could take 8,000 to 10,000 every year—at least.

If we took all the deer that could be taken, and didn't waste so many, a lot more hunters would come home happy. They might not admit it right away, but in the long run they would.

Utopia could be a little closer. We'll never quite make it, but 1 or 2 or 50 years from now, if we've made headway, it will be to the credit of the Michigan sportsman.

If we've gone the other way, it will be his fault.

FROM: —11

DEPARTMENT OF CONSERVATION

LANSING ~~13~~ MICHIGAN
26

TO:

Mr. Claude TerHaar

RFD #2

Hudsonville, Michigan

POSTMASTER: IF THIS PACKAGE IS NOT DELIVERED IN TEN DAYS. PLEASE RETURN TO SENDER. RETURN POSTAGE GUARANTEED.

AUTHORIZATION FOR USE

MATERIAL in this booklet purposely lacks copyright. It is hoped that chapters, illustrations, or parts of chapters will be found suitable for reproduction, within the ethical limits of "context lifting" and accreditation. The major interest of the Michigan Department of Conservation is that information in the booklet receive wide distribution and that it serve as an aid to all who are interested in the white-tailed deer.